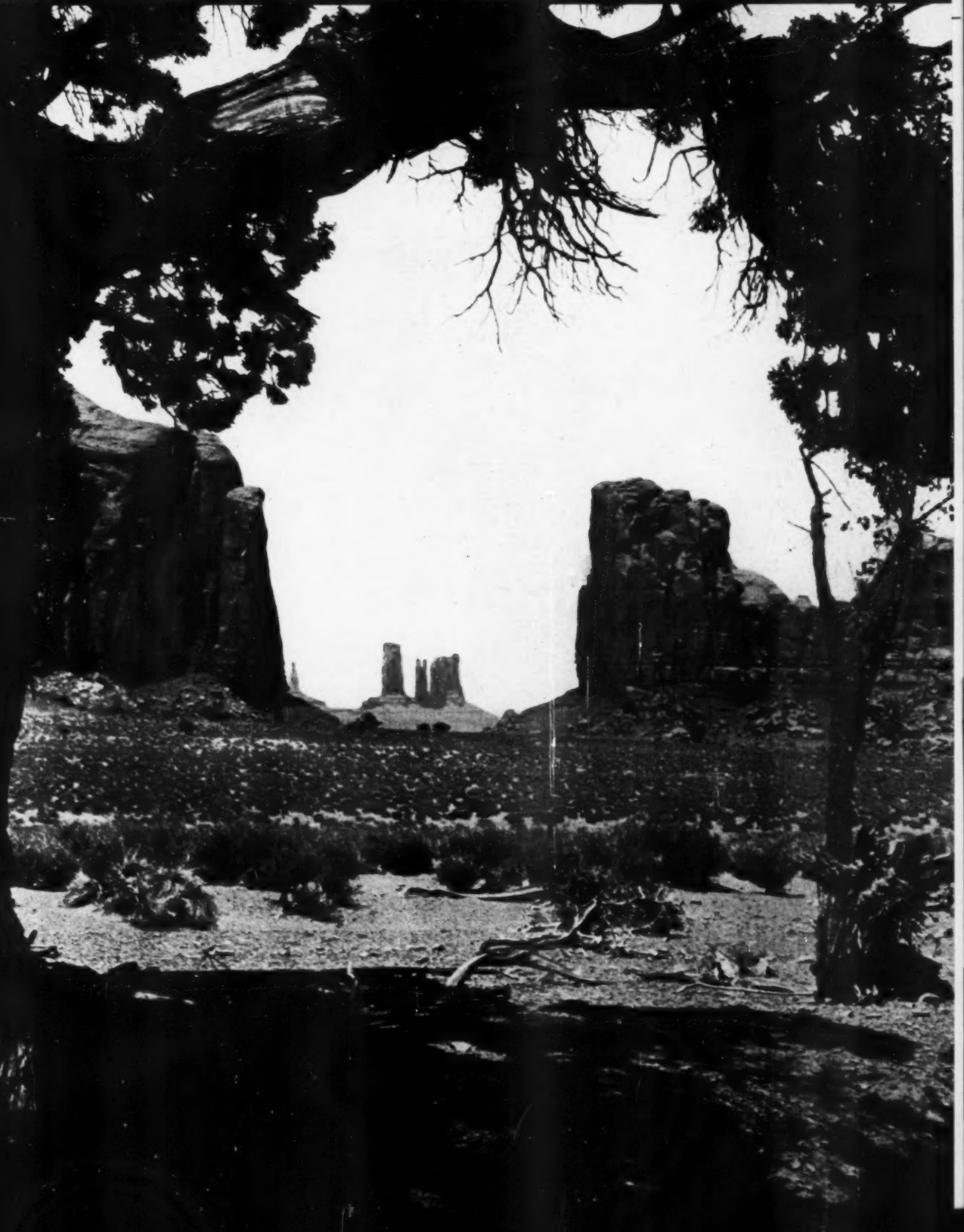


American

FORESTS

FEBRUARY 1982



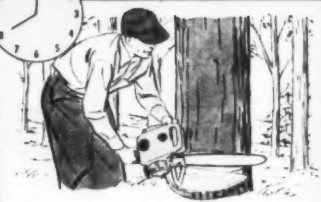
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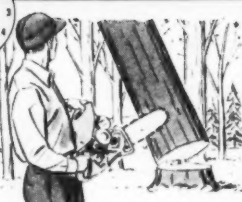
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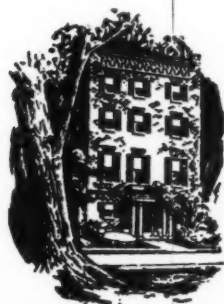


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The American Forestry Association, publishers of *American Forests*, is a national organization— independent and non-political in character—for the advancement of intelligent management and use of forests and related resources of soil, water, wildlife and outdoor recreation. Its purpose is to create an enlightened public appreciation of these resources and the part they play in the social and economic life of the nation. Created in 1875, it is the oldest national forest conservation organization in America.

American FORESTS

PUBLISHED BY THE AMERICAN FORESTRY ASSOCIATION

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Cover

Here, Castle Butte is artistically framed through a lone, picturesque tree and the camera lens of photographer George Henry. It rises majestically from its desert foundation to take a regal stand among its neighbors in Monument Valley which stretches between northern Arizona and southern Utah. The area, with its vivid colors and many scenic wonders, was once hallowed by the Indians and today figures prominently in Navajo myth and legend. Travelers find the valley's unusual formations interesting camera studies, and the site has frequently served as a location for moving pictures.



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American FORESTS Forum

Looking Ahead—Turn about is fair play. If youths work hard to improve the Blue Ridge mountain forests of Virginia, the forest and its environment should likewise improve the boys. That's what's happening, **Dorothy Walker** reports in the March issue, through the Federal Bureau of Prisons' rehabilitation program for boys at Natural Bridge Camp. Maybe we'll title it *A Better Forest, Better Youth*. Shifting to the Southwest, the issue will also offer *Brush, Grass, Beef and Dollars*, in which **H. A. Daniels** extols the potential of that area's range land if people will only give the grass a chance. He tells how he has proved it can be done. And there'll be the concluding chapter of *Abuses Under the Mining Laws*, in which **Cleveland van Dresser** tells of injustices being perpetrated on Bureau of Land Management public lands. He calls this third and final installment *You're Being Robbed*.

You'll also find our two popular continuing how-to-do features, *Your Shade Trees* and *Managing Your Woodland*, plus a number of other articles of interest. **R. R. Fenska** takes over the Shade Tree page with *Don't Give the Bugs a Chance*, while **T. A. Liefeld** will advise woodland owners of the South on *Thinning for Pulpwood*.

In This Issue—One reason your February issue is a bit thicker than usual is the added eight pages (27 through 34) devoted to *They Plan by the Century*, an appraisal of Pope & Talbot's proposed cooperative sustained yield logging agreement which would involve a long term management plan for combined Company and U.S. Forest Service timber holdings of the Middle Fork Willamette Working Circle in western Oregon. **Harold B. Say**, a native Oregonian now with the Washington office of the Portland Chamber of Commerce, collaborated with **Nort Baser**, managing editor of *American Forests*, in writing this article after a thorough on-the-ground look-see.

In *Peace Comes to Montana's Forest Range* (page 8), **Dale White** relates how livestock operators, sportsmen and other interested factions

have found a common meeting ground for their range use differences with U.S. Forest Service officials, thanks to friendly pow wows and a ten-day school arranged by two federal rangers. Pull your chair closer to the fire, then turn to page 12 to read **Alfred S. Campbell's** *Cold Weather Crop*. You'll like the delightful twist he gives to a winter logging chore on his Vermont farm. **Cleveland van Dresser's** second installment of *Abuses Under the Mining Laws* (page 20) deals with *Pumice, Despoiler of the Santa Fe*.

"The Great American Desert" is little more than a name, reports **Edna Hoffman Evans** in *Thirsty Acres* (page 18). That arid region stretching from Arizona into California has been largely overcome by irrigation and is now growing valuable crops. Elsewhere you'll find **Charles Elliott's** Alaskan hunting article, *Date with an Emperor* (page 16), *A Desert Flower's Riddle* (page 15) by **Roger Sheldon**, *Nomads of Europe's Arctic Forests* (page 24) by **Frank Illingworth**, and our two features. *Your Shade Trees* (page 26) deals with *Winter Injuries*, and *Managing Your Woodlands* (page 23) is devoted to **K. E. Barraclough's** discussion of *Partial Cutting on Small Holdings* in New Hampshire. There's also a report on the AFA's election of officers for 1952 (page 35) and **G. H. Collingwood's** *Washington Lookout* (page 4).

Our Readers Say—Devereux Butcher, field representative for the National Parks Association, writes to take issue with **L. F. Whittemore's** *A New England Industrialist's Viewpoint* (page 29 of the November 1951 issue):

We believe that not even all foresters would agree with Mr. L. F. Whittemore when he speaks of "the national parks where tremendous values in cellulose fibre are allowed to go to waste." Many foresters have broadened their vision to recognize that uncut trees also have value for civilization.

Did Mr. Whittemore make this statement intentionally only about our superb national parks; or did he actually mean this to apply to both state and national parks? Does he advocate cutting the forests in the beautiful state parks of his New Hamp-

(Turn to page 7)

Woodsmen, Fell This Tree . . .

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MARK A TREE FOR HARVEST BY CUTTING CREW



WASHINGTON LOOKOUT

By G. H. COLLINGWOOD

With the beginning of the new fiscal year less than six months away, the House subcommittee on Agriculture Appropriations on January 14 had scheduled Secretary Charles F. Brannan to open the statements in behalf of the Department's budget. He was to be followed by representatives of the several bureaus, and barring unexpected developments, all testimony for consideration by the House, should be completed before the middle of February. The "mark up" of the bill may follow in time for introduction early in March.

The individual project items are based on the President's budget which was presented to Congress shortly after it convened for its second session. The November elections are already casting shadows over Washington, so pressures promise to be heavy for Congress to complete all appropriation bills before the new fiscal year begins on July first, rather than to have them drag through the summer as they did during the first session.

This report goes to press before January 21, when the President's budget was promised for presentation to Congress, so no figures are available. It is safe to assume, however, that Chairman Jamie Whitten and the members of the committee will scrutinize every item for places to reduce or possibly make eliminations. In spite of this, the general feeling is that the heavy drains of the defense program will be used to support requests for larger appropriations with which to better protect our forest reserves from fire, insects, and disease, and for the construction of access roads to timber on the national forests, O and C lands, and Indian reservations.

A Missouri Valley Authority to supervise developments in the ten states of the Missouri basin, after the manner of the TVA, will likely not receive serious consideration during the 82nd Congress. This became apparent January 4, when President Truman announced the creation of an 11-member Missouri Basin Survey Commission, and allowed one year for preparation of a new study of the land and water resources of the area and recommendations of a plan for their coordinated development, conservation and use.

In a prepared statement, the President said he will name private citizens and members of Congress to serve on the commission. More specifically, he said, "I want them to review the many different kinds of problems that exist in the large area of the basin—ranging from the high, arid plains and mountains on the West to the humid, level lands along the lower river."

His statement referred to the Pick-Sloan Plan, and to one submitted to Congress in 1949 by the Department of Agriculture, as containing "much that is valuable and sound today." With all this, however, he said there is need for "a thorough re-evaluation of the whole problem." Meanwhile, the President disclosed, work in the Missouri Basin will continue under the Pick-Sloan Plan which Congress authorized in 1944.

The Stockmen's Grazing Committee has released a new version of its "Proposal for an Act" to stabilize the livestock industry dependent upon the federal range. The draft has been distributed with the apparent expectation it will be introduced early in this session of Congress.

It applies to the 14 western states, 50 percent of whose total area is federally owned. If enacted, a single code for range land management would take the place of the several laws under which grazing is now administered on the national forests, the federal grazing districts, and other withdrawals or reservations, including those under Title III of the Bankhead-Jones Farm Tenant Act.

Of special interest is the proposal to issue ten-year grazing permits and in renewing them to authorize preference to stockmen who own, occupy, or lease base properties on the reservation at the time when the Act is passed. This feature, alone, promises to arouse vigorous opposition from many supporters of national forest policy, on the ground that livestock men now holding grazing permits on the national forests will be given a degree of permanence almost comparable with ownership. Moreover, the argument will be made that such an act would handicap small operators and favor large ones. It would prevent any immediate changes in the number of stock to a permittee.

The Senate Committee on Expenditures in Executive Departments has printed the hearings, conducted last August and September, on S. 1149 to reorganize the Department of Agriculture. A report, and probably a new draft of the bill is expected shortly after Senator John L. McClellan of Arkansas, brings the members of his committee together. Should the new draft continue the original proposal to carry out the recommendation of the Hoover Commission and combine the land administrative functions of the Bureau of Land Management with those of the Forest Service, and group them together in the Department of Agriculture, the hearings are replete with supporting testimony.

On the other hand, Secretary of the Interior Oscar Chapman presented a strong statement capable of being interpreted as a plea for a new Department of Natural Resources. This, it will be recalled, was proposed by the Hoover Commission's task force on Natural Resources and supported in a minority report submitted by members of the Commission. Those attending the Senate Committee's hearings when Secretary Chapman testified were impressed by the reception given his testimony by the Committee.

"Tree planting of farmstead windbreaks and field-border belts as conservation measures in the Great Plains continues to increase," states Hugh H. Bennett, in his report as Chief of the Soil Conservation Service for 1951. "There is greater demand for tree planting on range land for livestock protection; narrow strip plantings within sandy, dry-land fields; and the one- to three-row windbreaks for protection of irrigated land."

"Soil Conservation district cooperators in the northern Plains planted 13 million trees this year, which is ten percent more than last year. Of this total, Service nurseries furnished 3.5 million seedlings, two million fewer than last year. Most of the remainder was obtained by farmers from private sources . . ."

The reduction in the number of tree seedlings furnished by Soil Conservation nurseries may result from the Secretary of Agriculture's memorandum No. 1278, of February 15, 1951, reported by the *Lookout* in April. Dr. Bennett indicates, however, that the new plan is working out in ways to give the Service "a chance to get more constructive work done."

(Turn to page 7)

THE LONG AUGUST NIGHT WAS HOT—but not as hot as the bitter fighting that raged about Agok, Korea, in the Naktong River area. Sergeant Kouma, serving as tank commander, was covering the withdrawal of infantry units from the front. Discovering that his tank was the only obstacle in the path of an enemy breakthrough, Sergeant Kouma waged a furious



nine-hour battle, running an eight-mile gantlet through enemy lines. He finally withdrew to friendly lines, but not until after his ammunition was exhausted and he had left 250 enemy dead behind him. Even then, although wounded twice, he attempted to resupply his tank and return to the fighting.

“A withdrawing action is not my idea of how Americans should fight,” says Ernest Kouma. “If we must fight, let’s be strong enough to take the offensive. In fact, if we’re strong enough, we may not have to fight at all. Because, nowadays, *peace is for the strong.*”

“So let’s build our strength—to keep a strong America at peace. You can help by buying Defense Bonds—as many as you can afford. It’s far less painful to build for peace than to destroy in war. And *peace* is what you’re building when you buy Bonds.”

M/Sgt. Ernest R. Kouma



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NEWS IN REVIEW

SCS Annual Report—The rapid progress in soil conservation during the last 20 years is the keynote of the U. S. Soil Conservation Service's annual report for fiscal '51, recently released by the U. S. Department of Agriculture. The report also emphasizes the need for soil conservation to aid the nation's mobilization effort and asserts that total, not partial, conservation is essential.

The report states that the Service helped 128,502 farmers and ranchers develop conservation plans on 36,259,299 acres last year. This brought the total as of June 30, 1951 to 883,348 plans covering 246,740,009 acres. Farmers applied conservation measures to 25,596,642 acres, making a total of 140,404,405 acres under conservation planning.

Soil conservation surveys, to provide the basic information for application of complete plans, were completed on 35,181,686 acres last year making a total of 376,323,538 acres inventoried up to July 1, the report states.

Progress in South—The rapid expansion of the southern pulp and paper industry was the theme of the annual meeting of the Southern Pulpwood Conservation Association January 16 in Atlanta, Georgia. Under expansion plans at existing mills and construction of additional ones, H. J. Malsberger, general manager of the Association, estimated that the amount of pulpwood consumed in the south will be increased 25 to 40 percent within the next two years.

Oak Wilt Threat—Oak wilt offers a real threat to the nation's oak forests, but science is making encouraging progress in its battle to check the deadly plant disease, according to a recent report to members of the National Oak Wilt Research Committee.

The report said plant pathologists in 1951 discovered new outbreaks in Kentucky, Maryland, Michigan, North Carolina, Tennessee, Virginia and West Virginia and warned that the threat to oak forests is increasing each year. In certain woodlands, it pointed out, the possibility of controlling wilt no longer exists. It added, however, that the situation is "far from hopeless" because research

already has produced many important answers and likely will produce more.

Reviewing recent progress toward learning more about the disease and developing effective means of fighting it, the report said that scientists now have methods for positive identification of wilt by culture tests. It also said spotting new areas affected by wilt has proved faster, easier and less expensive when done from airplanes.

Names in the News—David Graham, formerly financial vice-president of Weyerhaeuser Timber Company has taken over similar duties with Standard Oil Company of Indiana. Graham was a speaker on the conservation panel at AFA's annual meeting last October.

H. E. Wood, state supervisor of agricultural education in Florida has been named 1951 "man of the year" by *Progressive Farmer*.

Fred M. Claridge was formally installed Jan. 28 as state forester of North Carolina succeeding William K. Beichler. Claridge formerly was assistant state forester in charge of forest management.

Asher Kelley has been appointed executive secretary of the West Virginia Forest Council. This is the first time the position has been placed on a full-time basis.

Resigns AFPI Post—Edwin R. Butler, for the past two years assistant managing director of American Forest Products Industries, Inc., has resigned effective February 1. A former Memphis, Tennessee newspaperman and hardwood lumber association official, Butler was in charge of AFPI's industry division and directed editorial and field coordination.

New Tree Farm States—The American Tree Farm System welcomed three new member states late in 1951. They were Colorado, Nevada and Wyoming, bringing the total to 33.

Wildlife Week—National Wildlife Week this year will be dedicated to preservation of a species of wildlife about to pass from the American scene—the diminutive Key deer of

Florida. Chairman for the March 16-22 observance will be Ed Dodd, creator of the popular newspaper and radio outdoors feature, *Mark Trail*, and winner last year of one of AFA's annual Conservation Awards. The Federation is seeking funds to keep a protection officer on the job in the Key deer area and to improve their island habitat.

Shade Tree Meet—Problems in maintenance of ornamental trees and shrubs will be discussed at the Seventh annual meeting of the Midwestern chapter of the National Shade Tree Conference February 13-15 in Chicago, Illinois. The program includes presentation of papers, discussion periods, a plant clinic and a "stump the experts session."

Conservation Award—A Connecticut Outdoor Writers' Association award for "outstanding work in conservation" was presented recently to Walter O. Filley, forester emeritus of the Connecticut Agricultural Experiment Station.

Ends Chamber Service—David J. Guy, manager of the Natural Resources Department, U. S. Chamber of Commerce, recently retired. Guy joined the Chamber in 1927 as a water policy expert and in 1932 was made assistant manager of the resources department. He became manager of the department in 1945.

Wolcott Replaces Johnston—Roger W. Wolcott, Raleigh, district superintendent, International Paper Co., has assumed duties as president of the North Carolina Forestry Association. He succeeds Don P. Johnston, Wake Forest, newly-elected AFA president, who held the North Carolina post for the last four years.

Forestry Leaders Die—Albert A. Legett, 47, Mississippi state forester since 1941, died of a heart attack December 11 just prior to a meeting of the Society of American Foresters in Biloxi, Mississippi. Legett had wide experience as a teacher and as a specialist in soil conservation work.

Henry Hodge, one of the oldest and best known district foresters of the Virginia Forest Service, died December 17 at his home in Salem. He joined the service in 1931 as an assistant forester and later was transferred to Salem to organize the district there.

Washington Lookout

(From page 4)

This is supported by his statement: "The Service was active in combining technical forestry information with local woodland experience for release as leaflets and guide sheets to help develop a working knowledge of woodlands among farmers. In-service training schools were held in many sections. . . . During the latter half of the year, conferences were held in nearly every state with the state and federal agencies to define relationships and develop better coverage of all woodland problems."

This is the last official report by Dr. Bennett, under whose direction the Soil Conservation Service was organized in 1935. He retired on November 15, 1951, and is succeeded by Dr. Robert M. Salter, formerly chief of the Bureau of Plant Industry, Soils and Agricultural Engineering.

Forum

(From page 2)

shire, too? Our commercially used forests are also a topmost necessity, for we must have lumber, paper and all the other wonderful things made from trees. . . . But we must not become blinded by our material needs to the point where we overlook our spiritual needs. The uplift that millions find each year in wild, natural woodlands and forests must never be denied.

Our November editorial, *Memory Acre, a Living Monument*, attracted favorable comment from a number of different sources. One was from Chauncey G. Paxson of Camp Pocomo, Lakeville, Pennsylvania. He wrote in part:

I am writing to secure information referred to in your editorial in the November issue. We have occasion to use a part of our acreage at camp as a memorial to many of our young men. We are at liberty to set aside anywhere from one to 25 acres. Your editorial coincides with discussions we have carried on with our staff and interested alumni.

On the same subject it was interesting to note that the South Carolina Commission of Forestry sent out copies to newspapers in the state and many reprinted it in their columns. Finally Mrs. Elizabeth Holladay, who wrote the poem, wrote in part:

I want you to know that South Carolina's prominent newspaper, *The State* at Columbia, copied your editorial concerning my memory acre. . . . Also I have received letters from all parts of the country commending my planting of trees as a monument to my son. Again I want to thank you for printing my attempt at poetry and dressing it up with your splendid editorial. . . .

MORE TESTIMONY ON INDIAN Fire Pumps FROM MEN WHO KNOW!

We believe the comment of these men, all of whom are prominent in the fire prevention field, tells more about INDIAN FIRE PUMPS than anything we might say.

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Peace Comes to Montana's Forest Range

The Treasure State's rangers and livestock owners went back to school to settle a long-standing feud. Does this point the way for other western states?

By DALE WHITE

FOREST management of national forest forage has been a fighting term in Montana until recently, with everybody even remotely related to this problem accusing the other fellow of "one-track-mind-itis."

As in all other western states, the main bout has gone countless rounds

between livestock operators dependent on forest range for summer pasturing and federal officials charged with proper use of public lands. Just to make the situation explosively complex, there are feuds within feuds: cattlemen carrying on the scrap their grandfathers engendered

with sheepmen, dude ranchers resenting livestock men, state fish and game officials squabbling over authority and sportsmen disagreeing with everyone.

Dissatisfied with this continuing state of affairs which has led to such bitter name calling in some western states that forest officers and stockmen are unable to find any common meeting ground, two Forest Service officials in Region 1 headquarters at Missoula, Montana made a serious bid for a remedy. At first, Tom Lomasson and Clayton Crocker thought only of getting the various factions together for a friendly pow wow.

What they learned after tossing the idea to some of these leaders impelled them to inaugurate instead a unique school. The first of its kind ever attempted in this country to deal directly with the issue, it has already proved remarkably beneficial.

Rangers learned their lessons well at U. S. Forest Service's school on multiple use of forest ranges





Photo by Western Ways

Gallatin National Forest provides ideal summer grazing for Elkhorn Ranch stock

One uncompromising fact hit these two men squarely between the eyes. No matter what problem in range management of forest lands came up, no matter who was right or wrong, invariably the Forest Service ranger bore the brunt. Then an even more challenging fact came to the surface—where an individual forest was being successfully administered to the satisfaction of all range users, it was the ranger who had effected this condition.

Years ago there was a better working relationship between livestock operators and forest rangers largely because many of the old-time rangers had been cowboys. They talked the stockmen's language and could show them what was happening to the range. In recent years, these men have retired from service or died. They have been replaced with what stockmen refer to contemptuously as

"book foresters." The younger men are dubbed impractical, one-minded, ignorant of what a cow or sheep will or will not do, unconversant with proper range management. Many are city-bred with no ranch experience.

"It was to meet this lack and give our rangers and assistant rangers the broadest kind of knowledge of the overall picture in range management that we invited our men in for a ten-day school," Lommasson explained. "Since it appeared the ranger was, or could be, the keynote to the situation, we wanted all men in this category to hear the viewpoints of all factions involved. They weren't to learn from textbooks or hearsay, either. We lined up recognized leaders who could be counted on to speak fully and not pull any punches."

Six separate and challenging viewpoints were presented: those of cattlemen, sheepmen, dude ranchers and

recreationists, sportsmen, state fish and wildlife management and Forest Service officers. Cases presented for discussion by all speakers were tough and controversial. If the rangers' ears burned at times, the opponents admitted having their eyes opened wide.

In a snug mountain camp in March, all participants had the chance to speak openly during school sessions. Equally edifying bull sessions continued after the camp cook had readied up the kitchen. An illuminating sidelight was that no one *had* to attend. None was paid to attend as pupil or instructor. Speakers drove long distances in sub-zero temperature at their own expenses. Yet attendance in the informal classroom was double that anticipated, with "outsiders" staying over to hear more than their own particular viewpoint.

Fortunately the man Crocker and Lommasson wanted for "dean" of



Sheepman Bill Denecke tends a part of his herd that grazes Montana's Gallatin National Forest in summer

this school was available. W. E. Fry was raised on a ranch near Red Lodge before starting in as fire guard in 1919 and progressing up through various forest offices. For some years he has been supervisor of the Deerlodge National Forest where he has a record of amicable and fair range management. To the invited speakers, he was the assurance that the sessions would not be loaded heavily in favor of the Forest Service.

Spokesmen for the cattle industry led off with a pungent picture of their place in the grass usage squabble that had the students' eyebrows stretching to their hairlines. A breakdown of several lengthy sessions revealed the cattlemen feel they are being bucked on all sides in their attempts to graze the forests. A good many still hold to the viewpoint it is "our" grass, even though it is public forage protected by federal officers through taxation. Cattle were on that grass before sheep, dudes and hunters, even before the Forest Service idea was born. That priority and their being big industry in Montana inclines them to feel they merit first preference over all users.

One long-time operator in the Boulder Valley wrote his opinions to Fry: "By the time the Forest Service parcels out the forest grass—a patch for big game, another for sheep, a little for campers and then tells us to keep our stock away from trails and scenic areas used by nature-loving dudes—we don't get the share we're entitled to by merit of the large agricultural income we contribute to our area."

The rangers talked back, replying one of their toughest jobs is to show cattlemen progressive damage to a range by overgrazing. The cattle spokesmen assured the rangers they hadn't had enough experience to know how to judge a range. The outcome of this particular issue was the Forest Service scheduling extra instruction for its rangers and their assistants in line with variable weather conditions and how to prescribe for adequate use.

Then they went one step further: rangers are now urged to take stockmen out in the field for an on-the-spot showdown. Heretofore the principal beef by ranchers against rangers was their being too one-minded on conservation and silviculture and being nervous Nellies about range use. Now that rangers invite sheepmen and cattlemen to go over the range area together, discuss the conditions and agree on usage, practically all friction has been eliminated.

"The key to successful range management is good public relations, a good selling job based on sound knowledge of your particular area, those who use it, their opinions and local reputation," Crocker summarized for the class. "Grass is never static. It varies almost every year. If you recognize this in making your decisions and play no favorites, you establish respect for the Forest Service. A ranger too conscious of his badge invariably creates antagonism."

Bill Garrison of Glen, private stockman and member of the state and na-

tional Taylor Grazing Act boards, stated a case in evidence of poor judgment on the part of a ranger afflicted with "rule-itis." Although there are variants of this same occurrence, all of them reaping trouble for the Forest Service, the case is indicative.

A rancher whose land adjoined a forest had by permit 50 cattle grazing on the forest. They were to be off the grass by September 1. Meanwhile, a fitful rainy season and constant breakdown of machinery had kept the man and his crew from finishing haying. A break in the weather saw them working overtime, and when September 1 dawned, a short day's cleanup remained. The rancher figured one day more on the forest wouldn't create havoc, so he stayed with the haying.

Midmorning the ranger appeared. Without bothering with a "good morning," he demanded the cattle be removed at once. The rancher explained his predicament, promising to have the cattle away the next forenoon. The ranger answered each statement with the rule, stating it over and over until he sounded like a cracked record and had built up a first class hate toward himself and what he represented.

In the classroom this case was discussed and the need admitted for holding to the rules. However, an even greater urgency was placed on the proper and profitable place for understanding and public relations in time of just such an emergency. At the conclusion, one ranger-student admitted wryly: "There's more than attitudes changing around here. We're setting up an entirely new working order."

None knew better the attitude of forest range users toward the sheepman than William "Bill" Denecke, former president of the Montana Wool Growers Association and at present manager of the large Rambouillet Sheep Company in Bozeman. His first point was illuminating: "Most sheepmen in Montana feel the forest range is an integral part of a ranch and should be recognized as such." Smiling at the students who have been rejecting the idea for years, he continued: "We believe we can work out any problems we have with the Forest Service."

Before World War II, sheep were the primary users of Montana's forest ranges. Since that time a lack of herders who will go on mountain ranges and a changeover to cattle have put sheep in the minority.

Denecke went on to say the majority of sheep permittees would favor continuance of lower and upper limits now in effect. Bedding out has been found practical and sound, he noted, "but on grass ranges we may be getting on too late after the feed has become too coarse and dry. Late shearing is largely responsible for this." He also stated many permittees would be willing to put up considerable money for range improvements, rather than take cuts in their permits, so vital is forest grazing to their operations.

Reminding the rangers that grass is only a watershed protection until it is turned into pounds of meat and wool, this independent sheepman concluded by wading right into a very sore spot. He believes big game should be kept in balance with their range, just as domestic livestock are.

Stockmen come in for considerable criticism from dude ranchers regarding their use of forest range, according to an excellent report given by Walter Nye, secretary of the Northwest Dude Ranchers Association. Yet Supervisor Fry of the Deerlodge and J. C. Urquhart in the Gallatin National Forest have proved there is room for all, provided permittees use judgment in selecting driveways and campsites. Fishermen and campers want stock kept away from streams and from polluting the main trails. Still, stock must move to forage and have access to water.

Grace Miller, operator of the Elkhorn Dude Ranch near Bozeman, outlined the Gallatin situation for the school sessions: "We have all worked together in the Gallatin to bring together the interests of livestock, fish and game and recreation. Mr. Urquhart has a splendid understanding of the mutual rights and importance of these various interests and fits them together extremely well and fair to all.

"For instance, we all got together a couple of years ago in our Forest and discussed various parts which had scenic value, certain camping areas where feed was good and water available for pack stock. One especially scenic spot near a lake had been allotted a sheep permittee. We got together with that person, picked out another spot as good from a feed value, and kept the sheep away from a beautiful meadow where dudes enjoy camping.

"We have been shown that to have feed available near shipping points, to have allotments in areas where feed is best at the time of year the

animals are on it . . . all these factors are important. But they're not so controversial that they can't be put together by any forestry man who is broadminded. This is certainly true of our ranger. The main thing is to get together, lay the cards on the table and talk things over. That way, it works out best for everyone."

Supervisor Fry has brought about a good working order on the Deer Lodge National Forest by allotting grazing permits in the Elk Park and

Brown's Gulch areas adjacent to Butte to dairy stock, since the copper camp is dependent on ranches in these areas for its milk supply. An intermediate area farther out is turned over to cattle and sheep operators. Then the dude ranches, packers and fish and game specialists have the 175,000 acres of the Pintlar primitive area for their playground.

Undeniably, in some forests the officer is pro livestock. The best grass (Turn to page 46)



Photo taken in 1916 graphically shows the extremely depleted condition of sheep grazing area of the Deerlodge National Forest

General view of the same Deerlodge National Forest area in 1950 shows lush forage where in 1916 there was only eroded barrenness





Photos by Norman Bailey

Al, the author's son, moves a birch log onto the skidway

By ALFRED S. CAMPBELL



WHEN Ram Dass decided to paint the walls of his bedroom pale green, he started me out on a hard, cold job. His bungalow stands in the outskirts of Calcutta, and my Vermont farm is so far removed from India that there seems no possible connection between the two places. But Ram Dass had made up his mind to paint that room pale green to welcome his new bride, and that made it necessary for me to spend a month on top of a snow-covered mountain in New England.

Ram Dass has never heard of me, but he finally has completed his painting job, been married and impressed all his numerous relatives with his skill as interior decorator. As for me, I am just getting my feet thawed out.

At the time Ram Dass made his decision to redecorate that room he went to a store in Calcutta and asked to see paint brushes. He looked over what they had in stock, but the quality was poor, and the size he had in mind was missing. "We are just making up our order for new ones," the shopkeeper told him. "We are sending it to a factory in St. Louis, which is a city in faroff America. I will

mail the order today, by air, and in next to no time you will have as fine a paint brush as you have ever seen."

The order went off in the mail plane, and in a few days it arrived at the offices of the brush manufacturers in St. Louis. Ordinarily, it would have been filled that day, but due to a shortage of handles the particular type of brush mentioned in that air-mail letter was out of stock. A wire went off immediately to a mill in Vermont which had been supplying good handles out of birch. And soon after the telegram was phoned from Bennington to the mill I started off to Bennington to buy some roofing. A hurricane had torn off my house roof, and so far, because of icy conditions, I had been able to put on only a temporary covering.

I drove slowly over the snowy roads, through the Notch, that deep gash in the mountain which separates the western half of our village from the eastern half, through Arlington and South Shaftsbury. Bennington stores, like those everywhere else in the state, were out of roofing materials of all kinds.

On the return journey I decided not to drive through the Notch. The



What has a pale green bedroom in Calcutta got to do with a snow-covered New England mountain? Well, Ram Dass needed a paint brush and the handle stock was in the author's woods

Cold Weather

Crop

road had been very icy on the way down, and without chains I doubted that I could make it to the top. Instead, I took the road which follows the meanderings of the Green River, past the covered bridge leading to Norman Rockwell's home, past farms and summer residences. Now that the road was better I speeded up. The river, to the left, sparkled in the afternoon sunshine. The snow glittered

too, but the mountains were dark and forbidding.

Just before the Green River crossed the New York State line and changed its name to Battenkill Creek I slowed down at The Old Red Mill. A battered car was dragging some big birch logs from a skidway across the road to the mill itself. As I slowed and stopped, Jerome Viault, who owns the Mill, walked over.

"Got any birch cut?" he asked. I hadn't, and said so.

"I could use some," he told me. "We're getting pretty short of logs, and I just got an order from St. Louis which will take more than we have on hand. Most of the men who bring me birch say the ice is so bad on the mountain trails this winter that they can't skid out their logs."

I thought quickly. Viault was pay-

The day's work done, Al is ready to start for home on loaded bobsled



ing, I knew, \$35 a thousand feet for birch, and I could use some extra cash to make up the losses suffered on the farm from the hurricane. "I'll start cutting tomorrow," I promised, and drove off.

The next morning I was awakened as usual at five-thirty by my wife, who brought a pot of coffee into the bedroom, where there was a fire burning in the little chunk stove. Following her was our tall son, Al, rubbing his eyes sleepily. "Temperature's 18 below zero," said Helen as we sipped coffee and lit cigarettes. "It snowed some more last night, too."

Al and I were soon on our way to the cow barn. The air was crisp and very cold, but inside the barn it was warm from the body heat of the cows. The row of a dozen Jerseys stood dreamily chewing their cuds. I turned

they didn't feel the cold, even when left outdoors all day.

Al was milking by now; the rhythmic click-click of the milking machine all but drowned out by the news report on the radio. As he filled the milk pails I carried them to the milk house, weighed the contents, poured the milk through a filter into the big cans and entered the weights on the chart. When we were halfway through, Phil Martinelli drove up in his big red truck, handed down our empty milk cans and loaded up with the full ones from the day before. He drove off at once to the milk plant, where his load would be processed and shipped to Boston.

Milking finished, we filled the mangers with fresh hay, removed the manure from the gutters and washed up the pails, milking machine and strain-

for the chainsaw, sugar, salt, bread, pots and pans, coffee, lard, two big bales of hay, a tarpaulin and miscellaneous odds and ends. It looked as though we were starting out on an expedition to one of the Poles.

At last we were ready. Climbing on top of the load we started off up the road. The horses hadn't been used in weeks, and were full of life. They danced and reared until we turned into the Upper Pasture, where we started ascending the steep slope. Then they settled down and pulled.

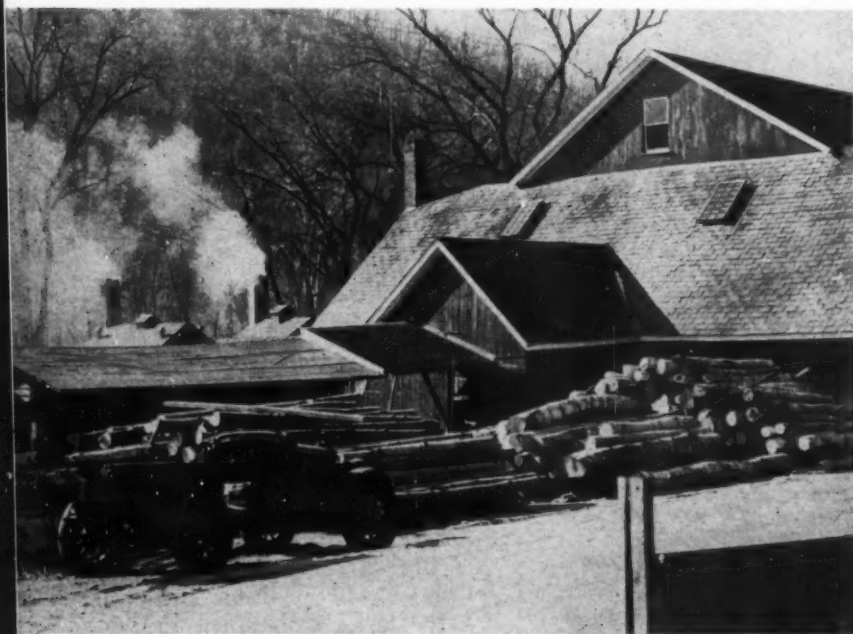
At the very top of the pasture was a grove of hemlocks, their drooping branches heavily draped with snow. We skirted that, and came out into an open, fairly level, series of fields, about half a mile long. Crossing, we could see a band of 18 deer standing motionless in the snow, watching us, flags raised. One of them bounded away, and in a second they were all in motion, leaping rapidly uphill and out of sight into the forest.

The wide fields crossed, we stopped to rest the horses before turning into a narrow trail which led steeply uphill for another half mile through dense woods. There were great oaks, graceful spruces, stark black ash and hundreds of maples of all sizes. The horses panted heavily, the steam rising from their flared nostrils like plumes of smoke. Again we came to level ground, and this time we were in the birch forest, a sharp contrast in black and white, like an etching.

We proceeded until we reached the middle of the grove, and there, with the old metal roofing we built a crude shack in which to store the tools and equipment. We felled a few hardwoods, notched them and built a skidway. In an hour the quiet of the mountains was shattered by the steady roar of the chainsaw cutting its way through a 20-inch birch. As soon as the tree fell I trimmed off the branches with an ax, and Al cut the trunk into 12, ten and eight-foot lengths. The big branches and trimmed tops we piled wherever handy, to be cut up later for pulpwood and firewood.

A 12-foot log is a nice size to handle on a bobsled, so we cut as many that length as we could. That size is easy to scale, too. To find the number of board feet of lumber which will come from a 12-foot log it is necessary only to measure the diameter at the small end. That diameter, times half itself, gives the number of board feet. For example, a 20-inch log would be . . . 20 times

(Turn to page 58)



The Old Red Mill, where birch logs began trip to India

on the faucet which fills the big tank supplying additional pressure for their drinking-cups, while Al took the left-over wisps of hay out of the mangers and started feeding grain. Then I currycombed and brushed off the cows, fed and watered the four calves in their snug pens and went into "The Annex," where we had half a dozen young heifers. I let them out of their stanchions and opened the door. They galloped downhill through the snow to drink from the icy waters of Terry Brook, then raced back for their feeding of hay. With their long coats

ers. By then we were famished. Breakfast of slices of ham from one of our pigs, fried eggs, cereal, hot cakes with our own maple syrup and plenty of milk refreshed us.

The next job was harnessing up the team and leading them out to the bobsled. We loaded the sled with some old sheets of metal roofing which had blown off during the storm, the chainsaw, axes, peavies, log chains, a crowbar, a first-aid kit, saw and nails, extra lengths of rope and wire, some frozen meat from the food locker, cans of gasoline and oil



Black and flat, yucca seeds (foreground) are about the size of cantaloupe seeds

A commercially-sound method for extracting yucca fiber from the leaves of this stately plant could open up a new and vital industry in the Southwest

By ROGER SHELDON

A Desert Flower's Riddle

SOMEDAY the Southwestern deserts may blossom forth with whole "forests" of yucca if the man ever comes along with the answer to the riddle which has been puzzling government researchers for so many years—how to find a commercially-sound method for extracting yucca fiber from the leaves of the stately plant.

Yucca fiber might become an extender or substitute for the standard hard fiber tows in tow twines, as upholsterer's padding, stuffing for insulation, and various other uses, if it can be produced profitably.

Both World Wars brought government experts to the Southwest's yucca stands to speculate upon the desert plant's fiber potential. Both wars found Uncle Sam's supplies of jute, sisal and hemp dwindling and overseas sources of the fibers threatened by the enemy, and a substitute supply was badly needed.

During the World War II study, research workers for the U. S. Department of Agriculture estimated that Texas alone has 345 square miles of harvestable yucca leaves and crowns which could be turned into marketable fiber.

But it'll take more than a government subsidy to make harvesting the fibrous leaves worthwhile, say B. B. Robinson, senior agronomist at the USDA's plant industry station at Beltsville, Maryland, and J. M. Weber, a co-worker, who recently reported the findings of the World War II investigators.

During World War I yucca was used as cotton bale covering. Over a four-year period 80 million pounds of
(Turn to page 47)



Stately as a monarch, the yucca sends spires of flowers toward the desert sky



Nimrods Dennis Finno, Paris Lee and Lou Minear proudly display bag of Emperor geese killed at Pilot Point

DATE WITH AN

Emperor

FOR uncharted desolation, no land on earth can equal the Alaska Peninsula that takes off from its mother land in a southwesternly direction, breaks up into jagged Aleutians and for more than 1500 miles cradles the cold waters of the Bering Sea. The few towns along the length and breadth of the peninsula are fishing villages or Indian settlements. All are outposts on the rim of this land which has no metes and bounds. The only contact between white men is by boat, plane and shortwave radio.

For three days we had camped on Ugashik Lake whose waters flow eastward to Bristol Bay. Here, tun-

By CHARLES ELLIOTT

dra, hills and turquoise water were all piled together in a shamble of beauty and desolation. To the south were the tips of the coastal range, their mantle of glaciers stark against the sky.

Rimmed in by nearer, smaller hills were the alder and willow swamps, streaked by rivers and creeks, limpid clear, with three-foot salmon fighting the currents to their spawning pools. Bordering the streams was head high grass, mashed flat by enormous bodies and padded feet, where Alaska Brown bears fed along the shore. Moose tracks cut deep into the well

worn game trails. A man on foot in this morass quickly lost his stature as the master of creation and became one of the teeming horde.

This was the home of the Peninsula bear, the largest and most dangerous carnivore on the North American continent. A venerable bear hunter in Anchorage had showed me a picture of a skin over 14 feet long. He said I might find one like it out on the Peninsula.

The nearest I had come to that ambition was on a hillside lake draining into the mighty Becharoff. We were zooming along in Dennis Finno's pontoon equipped Stinson when this big fellow reared up out of the grass like a comic boxer and made a couple of passes at the plane. Standing in the knee-high grass, he didn't look too large. But the hump on his shoulders spoke eloquently that he was an old timer. Dennis swung the plane around and dived at him. He

If you're looking for hunting at its best, come along to the Alaskan peninsula. The geese are big and plentiful and for diversion there's the bear

dropped to all fours and waddled into an alder patch.

We landed on the lake and taxied back to the beach. We crammed shells into our rifles and walked into the marsh behind the lake shore. The grass, which had been knee-high on the brownie, came to my shoulders! We made a big detour and approached the alder patch from the downwind side. At every step I expected the huge animal to come charging out upon us. We circled the clump at a respectful distance, but the bear had either gone into the brushy hillside above the lake, or refused to leave the safety of the alders.

"Before one of those walking rugs chews you into hamburger," Dennis said, "let's go over on the Bering Sea and shoot some Emperor Geese."

"Listen," I said, "I didn't come half way around the world to waste our dwindling lead supply on geese."

"I've got to go over there anyway," he said, "for gas." So we returned to the plane and took off.

Across a mighty arm of the Ugashik from camp sprawled a double-peaked mountain. Its terminus, ten miles out into the lake, dropped sheer a thousand feet into the water. Between the two breasts of the mountain a deeply rutted game trail connected the two branches of the lake. Snugging along the contours of the pass were a series of small marsh ponds, a quarter mile higher in elevation than the Ugashik.

By plane we had jumped three bears out of those ponds. When we saw them there, Dennis had squinted his tundra-wise eyes thoughtfully.

"That may be our answer to the bears," he said. "They've eaten their fill of salmon at the streams and are going back into the hills after berries."

At the first sight of dawn, Dennis let Paris Lee and me out where an alder fringe crowded against the lake. He roared away and left us standing there in the frozen, predawn wind.

I turned and pushed into the thicket with a boldness I did not feel. We crossed a well worn game trail, meandering under the alders. It was padded down by fresh, damp tracks.

"We might follow this path," Lee suggested.

"We might get the hell out of here," I replied, "to where we can see more than 20 feet."

Above us somewhere lay the wide, open plateau, leading into the pass. But what we had identified from the air as a brushy terrace bordering the lake, was a sharp slope, 300 feet high.

Then the alders gave way to willows and the earth shifted into a gentle slope, the willows straggled out and we stood at the edge of the plateau we had seen from the plane. It was covered with huckleberries and short grass, and bisected by a wide game trail. Thousands of wilderness hooves and pads had stamped it out three feet wide and a foot deep into the earth.

The sun was high when we met a wall of alders marching down the mountain into the pass. The game trail led straight into this labyrinth. The prospect of burying myself in another hell of brush was running around in my stomach when Paris reached from behind and caught my arm.

"Look!"

In the alders ahead brush was being pushed down by a heavy body. We crouched by the trail and I clicked my safety off and on again. The thing came closer. We could hear it rattling

turned and walked majestically along the brow of the thicket toward the ponds.

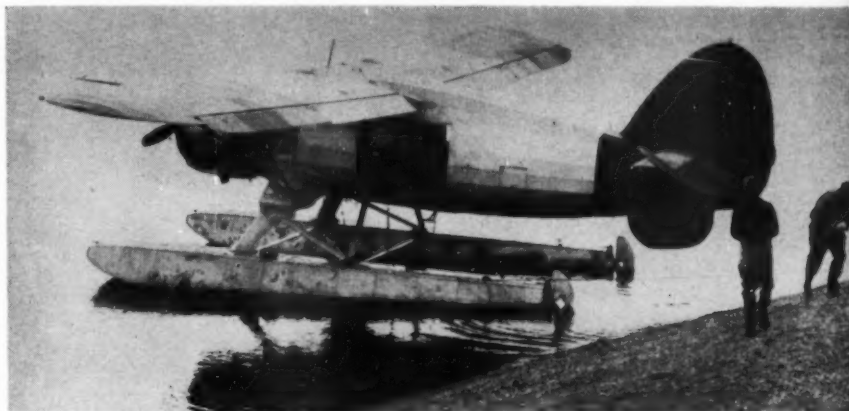
Our safest path through the alders seemed to be along the game trail, so we tracked it, step by step, stopping every few minutes to listen for the pad of heavy feet. An eternity later, the trail crossed an open grassy ridge and dropped off toward the arm of the lake.

Dennis picked us off the beach three hours later. We reported that the moose and a dozen ptarmigans were the only game we had seen. We'd missed the big brownie.

"Well, let 'im go," Finno said. "I've got a date with an Emperor."

We took off up lake into the wind and headed west toward Pilot Point. With his last few gallons of gasoline, Dennis buzzed the sleepy hamlet on the wide rim of Ugashik Bay, and drifted off to an inland lake a couple of miles behind the houses.

Elliott Jones, government repre-



Many sections of Alaska are accessible only by pontoon-equipped planes like this one anchored on Ugashik Lake

through the alders. At the very edge of the thicket it stopped a moment and we held our collective breaths. Then it stepped into the open.

It was a big bull moose. He hadn't seen or winded us, but he stopped suspiciously, his head high, his beady eyes looking up and down the plateau. Mentally I measured the distance between us, then the size of his spread. It looked around 50 inches, a small bull for that country.

"Quiet!" Paris hissed in my ear.

I knew our wheels were turning in the same direction. We didn't want to kill him, but in rutting season anything could happen. For five minutes he stood there, never seeing us, then

sentative in the village, met us at the landing. He and Dennis were old friends. The pilot introduced us. I saw him wink slyly at Jones.

"These lads never had any real goose shooting," he said. "Let's expose them to a few feathers before they go home."

"Pile in the truck," Jones boomed. "While the boys are pumping some petrol into the plane, I'll round up a few shotguns."

We rattled over a lumpy road into town and stopped at a building which might have been a combination home, garage, and blacksmith shop. Jones sent runners off in three directions to

(Turn to page 57)



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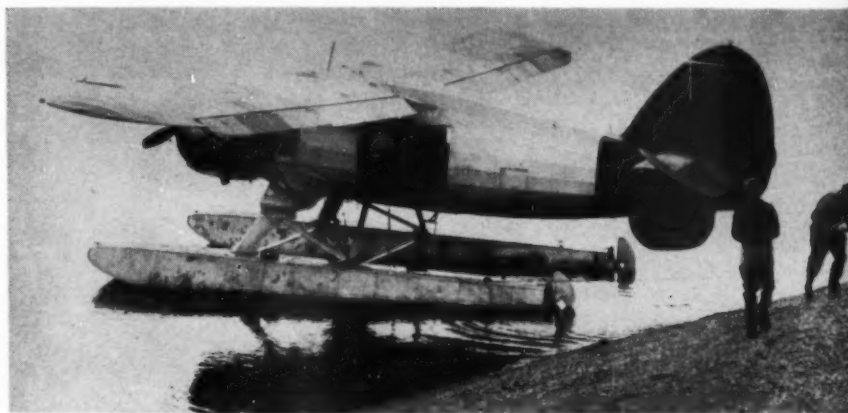
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Many sections of Alaska are accessible only by pontoon-equipped planes like this one anchored on Ugashik Lake

through the alders. At the very edge of the thicket it stopped a moment and we held our collective breaths. Then it stepped into the open.

It was a big bull moose. He hadn't seen or winded us, but he stopped suspiciously, his head high, his beady eyes looking up and down the plateau. Mentally I measured the distance between us, then the size of his spread. It looked around 50 inches, a small bull for that country.

"Quiet!" Paris hissed in my ear.

I knew our wheels were turning in the same direction. We didn't want to kill him, but in rutting season anything could happen. For five minutes he stood there, never seeing us, then

sentative in the village, met us at the landing. He and Dennis were old friends. The pilot introduced us. I saw him wink slyly at Jones.

"These lads never had any real goose shooting," he said. "Let's expose them to a few feathers before they go home."

"Pile in the truck," Jones boomed. "While the boys are pumping some petrol into the plane, I'll round up a few shotguns."

We rattled over a lumpy road into town and stopped at a building which might have been a combination home, garage, and blacksmith shop. Jones sent runners off in three directions to

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Forage scarcity in arid regions of the West sometimes results in serious overgrazing of the land

Some real desert—sand dunes a few miles west of Yuma, Arizona



Thirsty Acres

By EDNA HOFFMAN EVANS

Once the bane of travelers, the "Great American Desert" now is almost a meaningless term to those who cross it. Man is conquering with irrigation much of this sun-baked wasteland in the Southwest

A HUNDRED years ago the term "Great American Desert" was used frequently in referring to the southwestern portion of this country. So fixed in people's minds was the "desert" idea that when Jefferson Davis was Secretary of War in President Franklin Pierce's cabinet, back in the 1850's, he wanted to import camels to carry passengers, freight, and mail across the arid wastes that separated California from the rest of the country.

That camel project actually was put into operation for a short time. Two American officers were sent to Africa and the Near East to bring

AMERICAN FORESTS

back camels, and the animals they imported were tested in the region between Texas and California. But Americans did not take to the humped creatures. Then, too, the Civil War came along and attracted official attention elsewhere. Soon thereafter, the transcontinental railroads were built, and so the camel project was forgotten.

Forgotten, too, was the term "Great American Desert." Or, if not forgotten, at any rate it was less and less frequently used. Today, as the Southern Pacific passenger trains rumble westward from Yuma, Arizona, skirting California's Salton Sea, a barker does tell passengers they are crossing one of the worst sections of the "Great American Desert." But this is merely a part of the sales talk he uses as he sells dark glasses to passengers so they can watch the scenery in greater comfort. The train seats are well padded, the coaches are air conditioned, and special window glass cuts the glare. No wonder the "Great American Desert" is almost a meaningless term to those who cross it today.

But this was not the case for decades after the gold rush days of '49. Thousands of hardy travelers crossed the waterless regions in slow ox-drawn covered wagons, by horse, by mule, in stage coaches, and sometimes even on foot. Scores of them left their bones to bleach on the sun-baked sand and among the blistering boulders. Scarcely one of those who did cross in safety but suffered from heat and thirst in that inhospitable country.

What, then, has happened to the "Great American Desert"? Does it still exist, or doesn't it?

The desert is still there but to some extent, at least, man has managed to overcome it. Whether or not man's victory will be permanent is another matter. Today man is growing lettuce, carrots, and vegetables of all kinds, cotton, dates, and oranges in places that were once desert wastes. Desert soil is fertile enough; all that it needs is water for the thirsty acres.

The sections on which these crops are produced were once nothing but arid, sun-baked valleys—regions of cactus, mesquite, greasewood, and creosote bushes. Examples are the Imperial, Palo Verde, and Coachella Valleys in California, and the Salt River Valley (also called Valley of the Sun) in Arizona. The answer is irrigation. In these areas today one can see the sharp line that divides the



Roosevelt Dam, constructed in 1911, was the first built in Salt River Valley, Arizona

irrigated land from the desert. On one side of the road will be a parched waste of scattered low bushes and cactus. On the other side will be a green field of alfalfa, a citrus grove, or thriving acres of cotton.

Where does it come from, this water that makes the desert fertile?

In California, the answer at present lies in the Colorado River, that powerful stream that also was architect of the Grand Canyon. In Arizona's Valley of the Sun the answer is a series of dams built along the Salt and Verde Rivers. A little to the south, around Tucson, the water comes from wells that experts say are

rapidly lowering the state's already overtaxed water table.

With shortage of water becoming a serious problem in many parts of this nation, it is well to consider what has been done in the past half century to transform portions of that once "Great American Desert" into farm land. What has been done correctly, and what errors have been made in the process?

Take Arizona's Salt River Valley, a region of some 253,000 acres around the capital city of Phoenix. During the ten year period ending in 1946 this land produced crops valued

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Diversion dam in California's Imperial Valley has helped turn desert acres into fertile, productive farming land

Salt River Canyon, one of the more rugged parts of Salt River Valley. Much of this once-arid valley now is under cultivation





Trees are ripped from pumice mining claim to get at the mineral

Abuses Under the Mining Laws

INSTALLMENT II

PUMICE – Despoiler

A trip through the Santa Fe National Forest in New Mexico proved to be an enlightening experience of my Western safari last summer, and it wasn't to view the scenery, although there is plenty of it in that region. I had a definite purpose in mind. It concerned mining activities within national forest areas. I outlined this purpose to Forest Supervisor C. A. Merker and Engineer Roy Hunter at district headquarters in the old city of Santa Fe.

"So you are interested in mining activities in Santa Fe Forest," said Merker, with a sardonic smile. "Be at my office at 8:30 tomorrow morning and we'll show you some sights that may surprise you."

The next day we made our trip. We drove through twisting canyons deep within the Jemez Mountains. We scaled those mountains to the areas of tall timber—heavy growths of yellow pine. We saw vistas of indescribable majesty from the crest of Cerro del Pino to the awesome and curious

rock formations of Tent Rock Canyon. We saw rushing torrents and waterfalls, cattle grazing on vast plateaus 7000 feet high; we passed ghost mining towns and superb ranches. We encountered deer and spruce grouse and almost had to fight a forest fire. The transitions from the desert floor to the high mountains were as startling as they were unexpected, and the spectacular changes in topography and terrain were breathtaking.

And we saw other things. We saw a land that lay torn and wounded—a land oozing great gouts of its lifeblood from a score of bleeding sores. We saw a land stricken with a fearsome malady, from whose defenseless sides are being ripped huge chunks of its very being. We drove some 250 miles that day, most of it within the confines of the Santa Fe National Forest.

It was quite a trip. Let me tell you about it:

The first hint of what we were to

see that day came as we sped along the highway from Santa Fe to Albuquerque.

"Can you make out those white spots on the mountain?," asked Hunter, pointing to the distant Jemez slopes. I peered intently to the west, and was able to distinguish what appeared to be distinct, although small white blotches on the wooded mountainside some 20 miles away.

"Pumice mines," said Merker, answering my unspoken question. "We'll be there shortly."

In a few minutes we turned off the main highway near the Cochiti Indian Pueblo and hit the dirt road that leads toward Bland Canyon. A cloud of dust approaching in the distance soon resolved itself into a huge truck-trailer. It roared past us in the opposite direction. It was a load of pumice headed for the railroad siding at Domingo.

Allow me to digress for a moment. Pumice is a light mineral ash which centuries ago was deposited by vol-



Pattern of erosion after commercial pumice has been stripped off

r of the Santa Fe

By CLEVELAND VAN DRESSER

Marauders legally gouging the public domain are leaving a trail of gaping wounds throughout this Southwest national forest

canic action in certain sections of the Southwest. The Santa Fe National Forest has layers of it in practically pure form, like a very fine gravel. The substance in a highly refined state is familiar to your dentist. He polishes your teeth with it. In recent years the use of pumice as a building agent has become widespread. Mixed with cement it makes a building block of

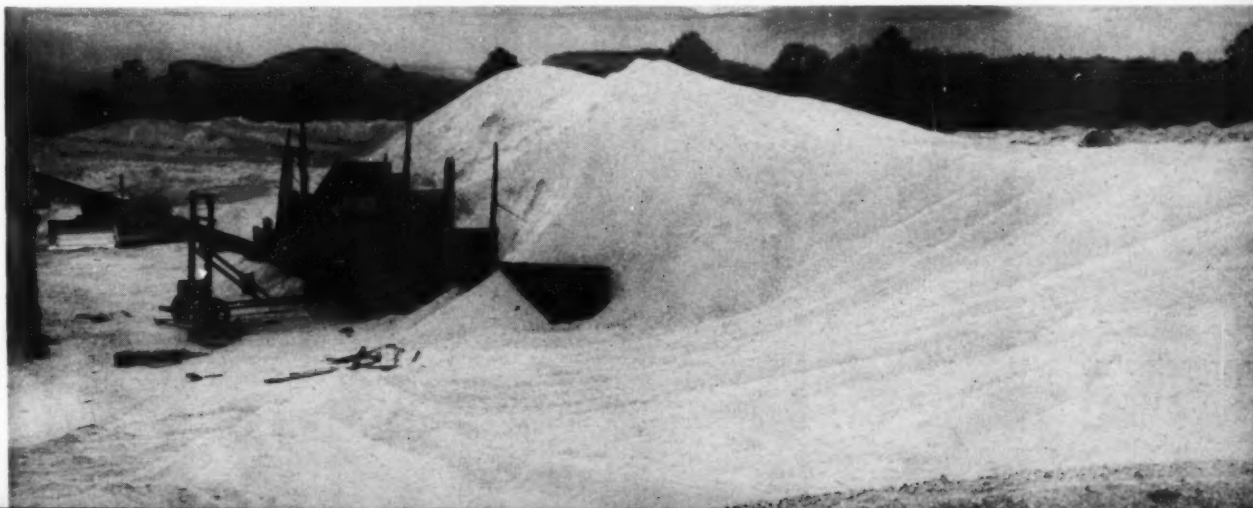
very light weight and extreme resistance to fire. It is an excellent insulating material, both against cold and heat.

In short, pumice—or tufa, as it is known locally—is a valuable mineral. And it is easy to get at and can be had for the taking in any national forest where it occurs. That pumice is abundant in the Santa Fe National

Forest is leading to an economic boom of relatively short duration in a confined area. But at the same time, with its present method of mining, it is spelling doom to as splendid a national forest as there is in the Southwest.

As we wound up Bland Canyon, it was a thrilling experience to watch the land rapidly change from the

Large-scale pumice mining almost invariably leaves a barren waste



semi-aridity of the desert to the green and inviting woodland of forest glade and dell. At the head of the canyon lies Bland City—once a prosperous and booming gold mining town complete with dance hall and hotel. It is practically deserted now—only a caretaker holds his solitary sway over a sizable group of cabins, near-pretentious houses and quite extensive mining equipment—all abandoned.

Leaving Bland City with a pair of impudent spruce grouse sitting atop the deserted ranger station, we headed over Del Norte Pass toward Via Grande. On our way up the pass, over

Hunter explained pumice mining to me. The material lies just below the few inches of topsoil. It can be discovered by a simple thrust of a sharp edged shovel. All the mine operator has to do is use a bulldozer to scrape away the topsoil, knock down the trees, and there lies the pumice in a layer that may be 15 feet or deeper. Nothing alive is left in the wake of the present day miner of pumice. Grass, bushes, trees, the very soil itself is ripped away to be left in an impotent and piteous heap as bulldozers and cats wallow forward taking gargantuan bites of the mineral.

active mines that day, and saw scores of acres that had been abandoned—"worked out," from which the operators had moved to fresher fields. In active and abandoned sites alike the destruction of the forest was ghastly.

It was a grim trio of men that returned to Santa Fe that night.

Engineer Hunter asked me what I thought of the situation. I thought I summed it up very neatly.

"Hell of a note," I said.

Tufa mining as it is practiced today in the Santa Fe is a three-fold evil before which the Forest Service is literally helpless. And it is perfectly legal under the mining laws. It destroys trees, the soil and causes vicious erosion. By the very nature of its formation, the earth's surface must be stripped of all vegetation to get at pumice. The process is similar to strip mining for coal in certain sections of Ohio, Pennsylvania and West Virginia. Pumice is invariably found at high altitudes in the Santa Fe. It is very light, and the eruptive actions of volcanoes in centuries past have left vast quantities of it as the top layer of their deposits.

The pumice miner has the cards stacked entirely in his favor. The mining laws permit him to use any timber on any mining claim that he may need in furthering work on that claim. It is merely accidental that timber occurs where there are pumice deposits. The filer of a tufa mining claim can uproot all the trees in his path, if he so chooses, and in most cases, he so chooses. He hasn't the time or inclination to attempt to salvage any trees; he's not in the lumber business. Also he rips away the topsoil to get at the pumice. The Forest Service can do absolutely nothing to stop either of these destructive practices.

And the erosion! Imagine, if you will, a ten-acre tract of land entirely bare of trees and topsoil on a precipitous mountain slope. When it rains heavily that ten-acre tract becomes a spillway—there is nothing to halt or hold the water. The ten acres becomes 20 as the unchecked flood attacks the terrain below, ripping it to pieces. Successive rainfalls reduce the mountain slope to almost complete nudity and a watershed is ruined. Not only that, but debris from the ravaged mountain chokes the valley below. This is no idle fantasy. I've seen it. Conceive this threat multiplied many fold as tufa miners ex-

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Shallow beds of pumice underlie large areas of fine timber and are a serious threat to timber production

a tortuous Forest Service road, we encountered another truck-trailer loaded with pumice. Shortly thereafter we came upon our first pumice mine in operation. It was a devastating spectacle.

Huge "cats" were scraping the material toward a "trap," a large box-like structure from whose interior emerged the belt of an endless conveyor. At the end of the conveyor was a truck-trailer into which the pumice poured in a grey-white stream. For several acres in every direction the ground was stripped of topsoil and trees, which were piled in irregular rows, exposing the pumice beneath.

"This is a cooperative outfit," said Merker, referring to the company that conducted the mining operations. "They let us know when they are going to open up a new territory so we can salvage some of the timber."

I learned later that all pumice miners are not that considerate.

All that day we roamed the Santa Fe National Forest. We saw mine after mine—some were big companies using the most modern equipment and taking in several acres at an operation—others were "gyppo" outfits, hopping from claim to claim with a single truck and portable conveyor and trap.

In all we visited some eight to ten



... *In New Hampshire*

Partial Cutting on Small Holdings

NEW Hampshire county foresters make every effort to obtain a high standard of forest management on the lands of their co-operators. At the same time, it is necessary to adjust cutting recommendations to their wishes and needs.

If the owners are to have the help of the county foresters it is important that they meet at least the minimum forest practice standards that will qualify them for tax abatement in accordance with the provisions of the Forest Conservation and Taxation Act of 1949. These forest practice standards are recommended by the District Forest Advisory Boards and are approved by the Forestry and Recreation Commission. When they are successfully applied to an area,

By K. E. BARRACLOUGH

either separately or in combination, they are considered as meeting the requirements for tax abatement.

The two important New Hampshire forest practice standards are grouped as follows:

Partial Cutting—Merchantable and defective trees may be removed by groups, strips, or individuals if at least one-third of the original merchantable volume of healthy trees of desirable species is left well distributed over the area to provide another timber crop.

Harvest Cutting—All merchantable trees may be removed, provided a sufficient number of young trees of desirable species at least three feet in

height are present prior to cutting. At the completion of the operation there must remain an adequate number of such young trees well distributed over the area.

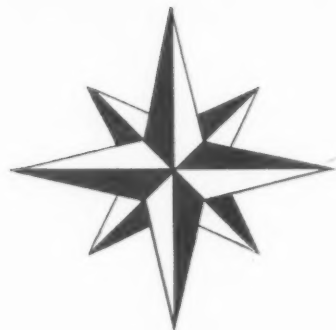
It is important in any discussion of partial cutting to recognize the two major objectives of a selective cutting, which are: 1) to preserve the rapidly growing immature trees which will be more profitable to cut after a further growing period; 2) to provide for the reseedling of desirable species. Under most conditions woodland owners can apply partial cutting when harvesting their merchantable timber.

Trees of different ages and sizes well distributed over a timber tract
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Forester explains how cutting has left room for the remaining trees to attain full growth



The Lapps, a shy but colorful people, flit through the forests like overgrown gnomes. Tending reindeer is their life's work, and in it they find a simple happiness



By FRANK ILLINGWORTH



Some of Sweden's most beautiful countryside is home to the Lapps

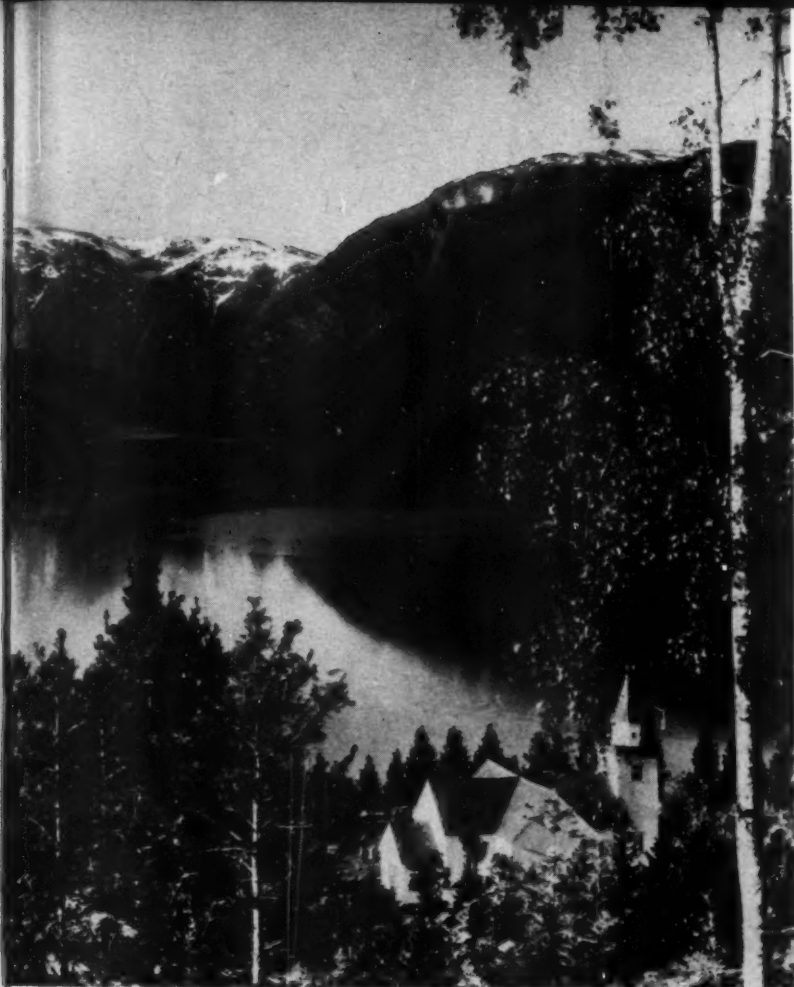


Lapps don't mind long Arctic winters in surroundings like these

Tent folk are easily identified by their peaked caps, flared jackets

NOMADS





THE Lapp, a shy little man who stands with knees bent, and wears a flared jacket, upturned shoes and a crimson pompom atop his peaked cap, flits like an overgrown gnome among the forests of northern Europe. A herdsman of superb skill, he spends his life following the reindeer from forest to fjels (hills) in the spring when "the fly" renders the forests uninhabitable and back to the trees when the first chill winds of autumn sweep over the stunted greenery of the north.

I first met these strange nomads, cousins of the Alaskan Eskimo, in the southern half of Lapland where great pine forests are the foundation of Swedish industries. A century ago, many a Lapp was conscripted into the Swedish lumber camps and the reluctant ones "encouraged" to greater effort with ax and sledge by being hauled on a rope beneath the ice of river or lake. Today, the Swedish Department for the Protection of Lapps sees to it that the nomads of forest and tundra live undisturbed. Indeed, the forests of northern Sweden have become veritable preserves for these simple, happy creatures.

Wolves may be hunted and killed freely, because they are the curse of the Lapps' reindeer herds, his main source of food. But permits are necessary to hunt other forest animals, especially bear and elk, both of which the Lapps are allowed to hunt for fur.

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of Europe's Arctic Forests



Trees play a prominent role in tribal law and lore of the Lapps

An encampment leaving lowlands for hills

YOUR SHADE TREES



..... *Winter Injuries*

ICE-COATED trees and shrubs often are things of beauty, but frequently the price of that beauty is injury and disfigurement. Many a shade tree owner cannot see sleet forming on trees without a shiver of apprehension, for when dropping temperatures turn the sleet to ice, trouble is ahead. The weight of snow and ice all too often is more than the tree can bear. Overburdened, the normally flexible branches become rigid and, unable to bow to the wind, split or snap off. Winter can be just as much an enemy of the shade tree as insects and disease.

To those who have experienced northern winters, the tragedy of sleet storms is not unusual. The unbearable loads placed on trees by ice and snow necessarily result in some broken branches—but major injuries usually are preventable.

Certain species of trees—maples and elms, for example—either are naturally brittle or develop weak crotches which make them susceptible to damage. Others, as the oaks, are better adapted by nature to withstand abnormal loads. In many cases, trees which are structurally weak may be strengthened by a few cables placed high up in the crown or by bolts through weak crotches, but sometimes a thinning-out of the crown may be necessary to reduce the load of sleet and snow and prevent disfigurement. This is not a job which can be done by the average homeowner, however, and it is wise economy to have the best expert available check over your trees for structural weaknesses.

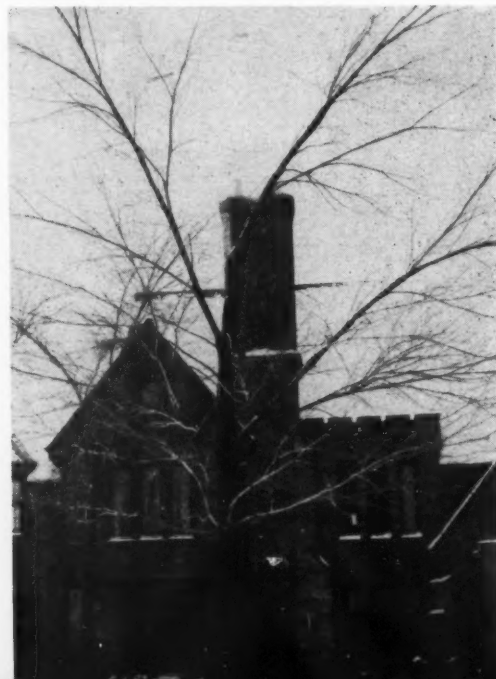
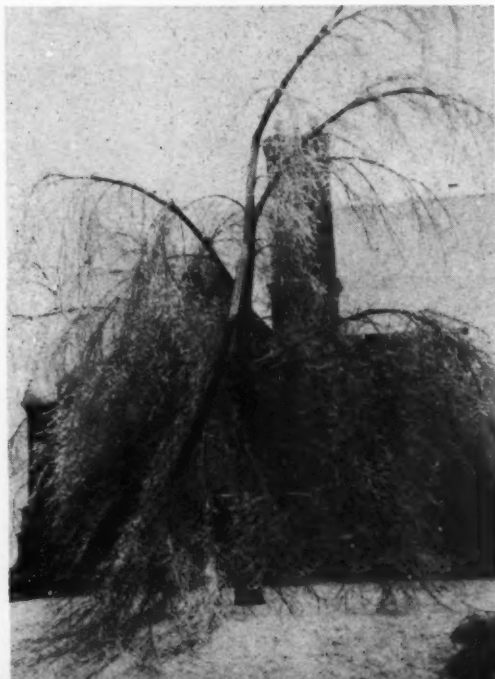
Trees already mutilated require careful and painstaking work if they are to overcome the damage they have

sustained. The broken branches must be pruned back to sound laterals to encourage a new crown; tear scars must be smoothed and traced to a streamlined perimeter and dressed to prevent infection; and weakened branches and crotches must be cabled or bolted to prevent further injury. Moderate fertilization will assist the tree in its effort to overcome its ragged appearance, and as new shoots develop they must be carefully thinned and trained so that they will form a desirable crown and not one that resembles an eagle's nest.

But split crotches and broken branches are not the only tree injuries which result from the hazards of winter. Have you ever heard a tree explode? They do, you know, but not in the ordinary way. The outward manifestations of such explo-

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A sleet storm and its aftermath. The tree will recover under skillful treatment (right) but proper bracing would have prevented damage in the first place





"Patch" logging presents a distinctive pattern on the Oakridge Unit. Nature reseeds bare areas

THEY PLAN BY THE CENTURY

By HAROLD BRADLEY SAY and NORT BASER

Community security, maximum utilization and forests forever in western Oregon. These are the goals of Pope & Talbot in proposing a sustained yield logging agreement with the government

A WINTER'S morning a few weeks ago when a Chinook wind was melting the new snow on the trees up to the 5000-foot level, we tramped along the moss covered ruts of a trail cut in 1863 by pioneers crossing the Cascades into Oregon's Willamette valley. The same virgin forest reached up the ridge sides and down into the dark creek canyons—the same, only a timber generation older.

We were out to have a look at some 190,000 acres in what is known as the "Upper Willamette Working Circle" where it is proposed that the U. S. Forest Service pool its stand with that of a private firm to the end that this forest shall never vanish; that it be man-

aged to yield perpetually and to give stability and permanent employment to the local community.

From high on the slopes we could see about us where bare "patches" had been snipped out of the forest, much as though a small boy had taken scissors to his hair. Later a close inspection was to reveal signs of a new crop beginning to grow. A carefully planned cutting cycle would provide another mature stand ready for harvest well before the entire unit had been logged.

As we traveled the ever expanding network of well built logging roads we encountered countless skillfully piloted trucks on their way down the slopes to the mill



Oakridge today, a thriving community which has more than tripled in size since 1947. The forests within view will not be logged

at Oakridge, a little western Oregon town which has, perhaps, the brightest future of any in the state.

The trucks, some loaded with timber off the Willamette National Forest and others off lands owned by Pope & Talbot, Inc., are units in an operation which this pioneer lumber company is voluntarily conducting as though its cooperative timber management plan were even now in effect on the proposed combined unit.

The pooling, if carried out after hearings by the U. S. Forest Service, would be done under Public Law 273 of 1944, sponsored in Congress by two Oregon men, the late Senator Charles McNary and Representative Harris Ellsworth. Mr. Ellsworth might be styled an "ultra conservative" by some. He is, without question, an avowed opponent of government expansion in business and a proponent of free enterprise. Yet he sees the proposed agreement as "almost exactly the type of cooperative sustained yield harvest plan envisaged by passage of Public Law 273."

Charles McNary, Republican senate leader at the time of his death, was likewise an apostle in the school that believes the least possible federal government makes for the best government. Senator Guy Cordon, who upon Senator McNary's death took charge of the bill in the Senate, is noted among his colleagues for his solid analytical thinking. "Will it work? Will this accomplish what we seek?" These are questions he insists on having answered before he lends his hand to any piece of legislation.

It is significant that Public Law 273 was nurtured into being by these three Oregonians, who knew the

forest problems of the Pacific Northwest at first hand. All felt that such pooling offered the only practical way of permitting private operators with otherwise insufficient timber holdings to go on a perpetual operating basis in tree growing and harvesting.

The government and private enterprise have long been in partnership in the lumbering industry of the Pacific Northwest. Public Law 273 would make them partners in forest management as well. The U. S. Forest Service is already committed to selective logging by trees or areas. A sustained-yield agreement extends that policy to private acreages.

It is doubly interesting that Pope & Talbot, Inc., the firm proposing to pool its timber acreage with Uncle Sam's in the Willamette National Forest, is the oldest lumber company west of the Mississippi.

Sailing from East Machias, Maine, A. J. Pope and Frederic Talbot landed in San Francisco in the gold rush days of '49. They resisted the urge that made a few men vastly rich and left a legion washed out and broken. They stayed with their trade. They knew that the new country would need to do a lot of building. Shortly they were operating a lighterage business on San Francisco Bay and were soon in the business of selling lumber shipped around the Horn. They knew New England lumber could not build the West.

The pioneers who settled the Oregon country had imagination. Without a vision of what the new country held for them, many would never have come.

They saw fields of wheat where only endless thickets carpeted the Willamette valley. They saw herds of cat-

tle and sheep where only deer and elk ranged the wilderness. They saw flour, wool and lumber mills rising beside waterfalls that down through the ages had thundered their way unhurried to the sea.

Trees were everywhere—towering oldsters, some rotting with age; trees in their prime, down to the tiny ones struggling for a bit of light in the dark forests. It took a vast amount of hacking to carve out a path wide enough to work the wagons down the slopes of the Cascades. Once down in the valley of the Willamette began the endless task of cutting and burning trees to open up a few acres for cultivation.

Conquest of the forest, not its preservation was the prime concern to those plodding wagon folk of '63—as it was to those who had preceded them by the Columbia River, Barlow trail and other routes.

In 1853, ten years before the 300-wagon train fought its way through the upper Willamette forests, Pope & Talbot started a sawmill at Port Gamble, a short distance from Seattle. Essential machinery was shipped around the Horn from East Machias to be installed in a little shed 45 by 70 feet standing on the edge of a mighty wilderness. A third generation still operates the mill at Port Gamble, although of course, it has been rebuilt and expanded many times. For almost a century it has moved lumber to home and foreign markets, much of it in Pope & Talbot ships.

Only men directly concerned with conservation realize how fast private timberlands of the Pacific Northwest have been depleted. In 1925, for example, there was a total of 28 big league mills on the Willamette and Columbia rivers from Portland to Astoria. Today there are only eight. And of these eight, only a few have adequate supplies of their own timber.

The acreage now being cut by these Columbia River operators will be used to produce pulp, hardboard, and in this age of chemurgy, perhaps sugar, molasses, stock food, rayon and many other profitable items from young trees ready for harvest in a third of the time required for a fir tree to make lumber. Some of the acreage may be used for growing trees to timber size again; but most of it will not. It takes many acres and many trees to make possible a perpetual lumber operation.

Most Pacific Northwest mills built on any basis of permanence should have an output of around 150,000 feet per eight hour shift, which means it is impossible to even consider sustained yield from small operations. It cannot be done. True, some small mills buying from the National Forests on a selective logging basis may be able to operate for many years, but they themselves cannot go into the business of growing timber which requires some 90 years to mature.

Looking to the business of lengthening its lumber producing years, Pope & Talbot in 1946 bought 30,000 acres of virgin timber lying along the middle fork of the Willamette River 45 miles southeast of Eugene, Oregon. This holding is checkerboarded with some 160,000 acres of Willamette National Forest timber. No other ownerships are involved. It is this timber that Pope & Talbot proposes to pool with Uncle Sam's, under Public Law 273.

Even before the property was acquired, the firm questioned the Forest Service for its reaction to the establishment of a cooperative sustained-yield unit in the area. In reply, the Forest Service stated that it considered the private and national forest timber in the upper Willamette Working Circle to have excellent pos-

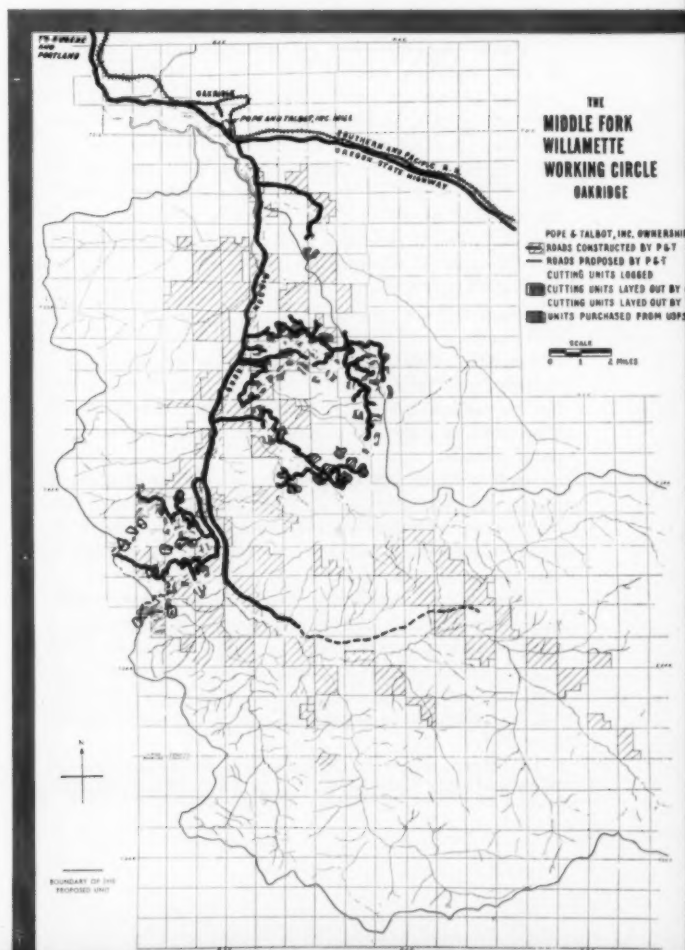
sibilities for such development, and that co-ordinated management of the interlocked public and private timber in the area through a sustained-yield agreement deserved careful consideration.

For a long period, there was a debate within Pope & Talbot over the desirability of entering into a sustained-yield contract. Why not go ahead on normal lines as in the past? The timber at the going prices was worth around \$25 a thousand. Pope & Talbot had paid only about \$2.50 a thousand. On a capital gains tax basis, Pope & Talbot would not do so badly in the 20 to 30 years required to clear out its holdings. The investment at Oakridge could thus be liquidated at a profit, and the new second growth used for pulp or other products.

But Pope & Talbot had been in the business of producing lumber in the Pacific Northwest for nearly a hundred years. Here was a challenge and an opportunity to stay in the business for another hundred.

So the company built its mill at Oakridge, previously important only to the Southern Pacific Railroad which keeps extra locomotives to pull the grade over the Cascades.

This plant was laid out on a basis of permanence. The saws started in April 1948, taking their timber from "patch" units worked out just as though Pope & Talbot and the government holdings were under one management. The annual cut is tentatively set at 60 million feet off the combined ownership which is estimated to include a plus six billion feet. Ownership ratio favors the government, five to one.



Logs being loaded from the heart of operations. Big trucks require well constructed spur roads

"Patches" are cleared of every log. Trees in background will remain 15 or 20 years to reseed area being cleared



George A. Pope, Jr., grandson of A. J. Pope and president of Pope & Talbot, Inc., threw the switch that started the saws. Said he, "This mill at Oakridge is proof that we face the future with the same faith as the men who founded this company. Here we have built, not for the next few years, but for the next century."

"Patch" logging, that is, checkerboarding of areas so that standing timber will reseed relatively small acreage blocks cut over, means not only more expensive operating than cutting clean, but involves the construction of a far more extensive road system. A road built to log 200 acres this year, perhaps may not be used for another 20 years to log an adjacent stand. By the end of 1951, Pope & Talbot had constructed over 90 miles of road at a total cost of over \$2,000,000. Development of housing for employees has cost more than \$874,000 to date. The company's total Oakridge investment at the end of 1951 had passed the \$11,000,000 mark.

Since the start of the Oakridge operation, the lumber industry generally has enjoyed unparalleled prosperity. But the annual return on the Oakridge investment has amounted to only 3.9 percent, according to the company's books.

High capital expenditures and a lowered rate of profit did not surprise Pope & Talbot. Its directors and management knew these were among the disadvantages of sustained yield when decision was made to operate on such a basis.

These extra expenditures have been undertaken without assurance that the government will enter into a sustained-yield contract with the firm. If it does, Pope & Talbot will be able to purchase the government timber involved "without competitive bidding at prices not less than their appraised value," to quote Public Law 273.

In return, Pope & Talbot would be bound by the sustained-yield contract to log its own lands in accord-

ance with the rules laid down by the Forest Service. The government and Pope & Talbot would become partners in a unified management project for the life of the contract.

The battle-cry of opponents to Public Law 273 is "monopoly." Perhaps the most outspoken critic is R. T. Titus, executive vice-president of the Western Forest Industries Association, who speaks for some—but not all—of the small sawmill and logging operators. He told us he objects not only to the provisions of the Act, but to its administration and even to the philosophy behind the entire program.

Part of his opposition stems from a contention that independent operators could be forced out of business, at least be obliged to cut the small tracts obtainable in such a way as to hurt future timber yields more than they could ever be helped by a few large sustained yield agreements. He fears the lack of restraints placed on the Secretaries of Agriculture and Interior as Administrators of the public timber in question. He further questions permitting any single operator to purchase government stumpage without competitive bidding, points out the loss to the public in revenue which could be gained under spirited bidding.

There are others who agree it would be possible for administration of the act to overstep its bounds, but they think it wouldn't be hard to curb such actions. Otherwise, most thinking men feel there's much to be gained for conservation in the few of these sustained yield agreements which can feasibly be worked out, and many feel perhaps industry is taking the bigger risk.

It is hard to see validity in the monopoly charge. If all the sustained yield units that are practical and could qualify under Public Law 273 were created, only ten percent of the government's timber in the Pacific Northwest would be tied up. Ninety percent of it would be available in the open market—to the smaller operator.

Congress knew, when it enacted the law, that only a few large operators could qualify under the Act. Too many had cut their stands. But here in the Willamette National Forest is what appears to be an ideal situation; a firm willing to take the long gamble and no outside ownerships involved. Here is an opportunity to make a vast area of timber land produce on a sustained basis forever.

We talked to Colonel William B. Greeley, formerly Chief Forester of the United States, and probably our best-informed citizen on forest problems. Of the monopoly charge he had this to say:

"The one justifying reason for such a monopoly is the benefit to the public in forest utilization."

In the Oakridge community itself, townspeople and employees alike are for the sustained yield proposal. In it, they see permanence and future development of the region from both industrial and recreational standpoints.

Because both the government and Pope & Talbot want to find profitable use for unused wood now going into refuse burners or being left on the ground, the firm is studying numerous fields of utilization. Whether

this will be centralized in one product—such as pulp—or in a combination of conversion products will be decided within the next few years. This, the people of the community and region know, will mean more industry and more payrolls.

Pope & Talbot wants to be sure it makes the wisest possible decision for maximum wood utilization. The Company has called in a number of experts and asked the U. S. Forest Products Laboratory at Madison, Wisconsin to help make a series of tests. Especially helpful has been Professor J. B. Grantham of Oregon State College School of Forestry. He made considerable preliminary studies some four years ago in collaboration with the Madison Lab, and we were fortunate enough to meet him during the course of our tour while he was taking another look at the area. Data he has helped assemble will influence the Company's final decision.

Professor Grantham states, "In my opinion the Oakridge operation represents a most promising approach to the problem of fully utilizing western Oregon's defective timber. A cooperative agreement between the Company and the U. S. Forest Service would assure a continuous long term supply of what has been unmerchantable wood and thus encourage large plant investments."

In two days of visiting around Oakridge, we did not find anyone who was against the idea of a cooperative sustained yield unit in the Willamette working circle. A sustained yield agreement, giving the company non-competitive purchasing rights on some 160,000 acres of U. S. Forest timber, is monopoly in a sense—but only in a sense. True monopoly implies control of a market for a product. The agreement would give Pope & Talbot no advantage in the sale of the timber produced at Oakridge. In fact, restrictions laid upon the firm by the government might even make their competitive situation more difficult.

Although Oregon's extensive forests still boast about half as much standing timber as when the pioneers felled the first trees, uncurbed logging at current rate of cutting would cause these forests to vanish in less than 50 years. Low cost tide-water transportation dictated that major early day lumbering be centered on the coast and Columbia River, thus sparing the inaccessible mountain regions of the interior. But now the cutting rate in the Pacific Northwest is about one and a half times the natural growth.

But something beyond fire protection, selective logging and disease fighting has to be done if adequate supplies of lumber are to be maintained.

The sustained-yield agreement plan, made possible by the Congress in 1944, is the only concrete device produced to date which would make possible perpetual cutting, seeding and regrowing on a scale big enough to count. The unfortunate element is that there are not enough large holdings of private timber adjacent to government stands to make it possible to work out a whole series of sustained-yield units.

In fact, the Simpson Logging Company is the only example of an industry now operating under Public Law 273. Although only four years have elapsed since this unified management program took effect late in 1946 on 270,000 acres of federal and private wood-



◀ Rigdon Road, main artery of system which has cost Company \$21,850 a mile. Adjacent trees won't be cut

lands in Washington State's South Olympics area, the observable trends are encouraging.

Most notable is the continuing bustle of activity in exploring every facet of utilization; something new is under study or test all the time. It is significant that there is not enough unused wood available to burn for the plant's own steam requirements, and yet Simpson recently bought another pulp mill for still further use of wood which has been left on the ground. The towns of Shelton and McCleary, in the heart of operations, have been greatly stabilized as to home ownership without deteriorating in any sense to company town status.

In time, it is to be hoped that the way can be opened to induce smaller holders of private timber to band together in such agreement with the government. If so, great acreages of private timberlands that otherwise would be cleaned off in ten to 25 years may be yielding timber perpetually.

The ultimate effect would be to greatly augment the nation's forests beyond the total now marked off in national forests. Certainly, such a program is not one of state socialism. Government has been supplying loggers and mill operators with timber for many years. No sizable or responsible group has proposed abolition of the national forests. The nation wants its public forests preserved.

Although the Pope & Talbot proposed sustained-yield unit has not at this date been approved, all the Company's activities have been planned and carried out with permanence as the foundation.

If you have the fortune to travel to Oakridge, you will see neat, cleverly-designed homes like those in the newer suburbs of any average growing American city. There's not a sign of rough lumber shacks or the cheap housing which mark some of the lumber ghost towns of the Pacific Northwest. Business houses of concrete and stucco are intermingled with those built of lumber. And the new schools are built with as much permanence as those of Albuquerque, New Mexico, or Alexandria, Virginia.

This is not a "company" town. True, Pope & Talbot had to do some building of houses in 1947 when it brought in hundreds of construction workers to Oakridge, which then had only 551 residents. Something had to be done. As a temporary expedient, it bought and renovated a group of C.C.C. camp buildings and 18 houses.

Next, the Company purchased 40 acres of land near the millsite, cleared the area, and started building

permanent houses. To date it has constructed 20 apartments and 68 two and three bedroom houses. If an employee desires to buy rather than to rent, he can do so at cost on attractive terms. No strings are attached. By purchase of the home he owes no allegiance to Pope & Talbot.

Simultaneously with the initial housing problem came that of electric power. There was insufficient juice to light the little city coming into being. Pope & Talbot installed a 2000 kilowatt generator and from it made the current available to the local Rural Electrification district.

By January of 1951, the village of 551 had more than tripled in size. Tax values jumped from \$229,000 to \$960,000 in the same period.

Old time residents saw improvements of which they had only dreamed. New grade and junior high schools and a new wing for the four-year high school. The City Hall had to move to a new and larger building. A modern sewer system is under construction. A fire station and library now stand on what was a vacant lot three years ago.

Charles L. Wheeler, executive vice-president of Pope & Talbot, who piloted us through the town pointed to the timbered hills reaching up behind Oakridge, then swept his hand toward the swift waters of the river:

"Look where they live—at the beauty around them," he exclaimed, "and I only get to see it now and then when I come up from San Francisco."

The dynamic, rusty haired Wheeler, whom the Pacific Northwest has known as "Charlie" all his life, loves people and the outdoors.

"Pope and Talbot will never cut the timber bordering the town and mill" he explained. "These people and their children should never see great forest fires eating up the mountain sides."

He turned to Art Brooks, general manager at Oakridge, who was driving the car.

"Art, how long would it take to get bulldozers and fire fighting crews into any of our units after a smoke report?"

Art calculated a moment, considered the speed of communication over a two-way FM radio hook-up always in operation and an ever-expanding network of access roads. "Thirty-five minutes," he answered.

That's what access roads the company is building for long term logging means—a protection the forest has never had.

"We can hold them to little fires—not let them get away," said Charlie.

A pleasant residential area developed by the company. Houses are for rent or sale



There is no pretense in Charlie Wheeler's enthusiasm over permanence of the forests of the Upper Middle Fork.

"It is hard for some of the old timers to grasp," he said. "A logging superintendent who has always operated on a straight gain or loss basis finds it a bit tough to have these roads and highways charged against the timber. It sometimes really gets him when he has to let a dozen patches of timber stand right alongside the road. Some of it wouldn't be harvested in his lifetime."

Charlie Wheeler, a past president of Rotary International, likes to see the philosophy of permanence building up in men whose business has always been to get the most trees into lumber from the least outlay of money.

People whose welfare is immediately concerned with permanence of the forest and lumbering are not the only ones approving the idea of perpetuity in the Oakridge area. Fishermen and hunters and those who simply like to travel through towering forests, camp in them, and lunch by the roadsides of a Sunday afternoon, are solidly for sustained yield management embracing the policies announced by Pope & Talbot. They like the prospect of an end forever to those two dread summer months when they can't see a mountain through the smoke haze of forest fires.

For 45 miles the Pope & Talbot and intermingled government holdings lie along the middle fork of the Willamette. Along the river, the trees are not to come down. Nor along the major creeks. And there is a total of 225 miles of river and smaller fishing streams. Six relatively large trout lakes and numerous small ones lie in the folds of the timbered ridges. Twelve forest camps have been established in the area and more will follow. Roads built by Pope & Talbot make them available to the motorist. At Oakridge the State Game Commission operates a hatchery to augment nature's work in the streams and lakes, whose beauty, and in some cases existence, depend on forest-stands remaining for all time.

Many practical lumbermen of a few years ago had little patience with anyone who thought in terms of perpetuating private forests. Certainly, they would admit, it was a nice idea but impractical unless an operator wanted to go broke. It wasn't in the cards. "When our stand is cut, we'll liquidate and get out"—such was their philosophy. Who but a dreamer would have dared to log in patches ranging from 16 to 112 acres—as is now being done by Pope & Talbot?

Hillman Lueddemann, vice-president of Pope & Talbot and general manager of its lumber division, grew up in the steamship and lumber business of the Pacific Northwest. Back in 1919, just after coming home from World War I, he handled the freight, took care of passenger tickets and baggage, swept out the premises and lighted the fire in the stove of the McCormick Steamship Company's docks. Only a practical young man could climb to a top executive position in a great company. Evidence of his high standing is that the community has called on him frequently to head its Chamber of Commerce, Port Commission, Community Chest and a hundred other tasks.

Mr. Lueddemann is the executive in Pope & Talbot who sold his principals on the idea of staying in the lumber business permanently through a sustained yield system.

"What is more important than the forest?" he philosophized, as we sat in his Portland office, looking out over the harbor where ships were loading lumber and other Pacific Northwest products. "It now produces shelter and clothing (rayon) and can give us molasses, alcohol, sugar and other food products for stockfeeds, which in turn mean beef, poultry, eggs, and milk. We are just getting started in the field of products converted from wood."

This idea of waste conversion is a phobia with Lueddemann. Sustained production is the keystone in the sustained yield proposal at Oakridge. Finding profitable use for the wood now going to the waste-burner, and for the timber left on the ground, is the thought uppermost in Lueddemann's mind. The Forest Service in any sustained-yield agreement it may make will insist on maximum economic utilization of all timber harvested.

Lueddemann thinks it an inexcusable waste that many paper mills of the Pacific Northwest still buy beautiful hemlock logs—number 3's cost \$40 a thousand—to chew up for pulp.

"Waste from sawmills can be chipped up for usage at a price equivalent to \$12 a thousand," he explained.

The Firtex Corporation at St. Helens, one of the pioneers in the production of satisfactory and attractive sound insulating board, is today grinding up logs costing \$40 a thousand. It is Lueddemann's bet that shortly it will be using the much cheaper chips from what is now mill-waste.

Indicative of the awareness of the value of this lumber now going to the refuse burner, is the number



of chipping plants now being installed or which are on order for Oregon and Washington firms.

"There are over 100 of them," Colonel Greeley told us. "They will put to use 500,000 tons of refuse now going into mill burners."

Colonel Greeley pointed out that progress is being made in utilization of waste. He cited among other firms, the W. T. Smith Lumber Company of Alabama, which is now converting the bark of its logs to tannic acid, the usable parts of its logs into lumber, and the waste ends into pulp. Colonel Greeley will not hazard a guess on the time when no waste will be left unused. But he sees a rapid increase in its use.

Otto Hannell, U. S. Forester for the Oakridge district, is another expert of the woods who will not hazard a guess as to when Pope & Talbot and other loggers will be leaving no fallen trees or broken pieces on the ground. "But," said he, "I'll say that within ten years Pope & Talbot will be using so much of it that it will not be necessary to burn slash where they have logged."

Incidentally, Hannell told us there had been but three man-caused fires in the Oakridge area in the three years that he has been Forester in the region.

Lueddemann visions the day when a great deal of mill ends and useless logs will go into stockfeed. "Out here in the Pacific Northwest we could raise more stock to the acre if more cheap feed were available. Foods already have been developed through molasses made of wood that cattle like and thrive on. We know there will be many other ways to use that which is now waste."

"The age of development of wood waste usage has just opened. In fact, Pacific Northwest lumbermen only this year really became aware of the potential value of what they have been burning and leaving on the ground when the Container Board Corporation came out from the East, seeking to tie up the waste output of numerous operations. Others came, too, offering to put in necessary chipping plants to prepare the material for use. Our Northwest timber owners and sawmill operators then woke up. If there was opportunity in this waste for Eastern corporations, there was opportunity for us out here."

The Willamette Working Circle will have to find a means of using waste. The percentage of defective timber in this Working Circle is exceedingly high. Pope & Talbot have found that they must fall a total of 100 million board feet of trees to obtain 60 million

board feet of merchantable logs for the Oakridge mill. Of the currently unused 40 million feet, approximately 30 million is in the form of conky, cull logs left on the ground.

The remaining ten million feet represent the defective parts of merchantable logs hauled to the mill and run through the saws. Pope & Talbot hold that the forest resources of the Oakridge area could be increased 20 percent if they can use the defective wood. A 20 percent increase in utilization would in practical effect increase the Willamette Circle area by approximately 38,000 acres. Pope & Talbot's stand is estimated at 1,124,000,000 feet; the commercial stand of the government in the area at 5,346,000,000.

Chemical or converting plants use several employees where a sawmill uses one, Mr. Lueddemann points out. From a community's interest, conversion plants hold a shining promise.

Lueddemann visions the day when the ruins left by loggers of this century will be the foundation of a new and greater business. The Zellerbach Corporation in 1945 bought 40,000 acres of Clark & Wilson logged off land when the latter firm finished its cutting and liquidated. Three crops of smaller trees for pulp mills will be harvested off this acreage in the time it would take trees to grow to lumber size.

Sustained yield and forest utilization planning like the Pope & Talbot plan for the Oakridge project, to use Lueddemann's words, "is like planting strawberries in rows so one may pass through to harvest the ripe fruit and leave the green undamaged to ripen."

It costs more to "farm" forests on a perpetual plan, but it means an ever bearing crop.

Yes, it took imagination to induce the pioneers of the Oregon country to accept the hardships of the trail. Anyone who roams through the upper Willamette area with George Pope, Hillman Lueddemann, Charlie Wheeler or their mill and logging superintendents, and who looks out over the virgin forests those pioneers of '63 fought through, is himself captivated by the imagination of these men looking down the future.

He, too, finds a thrill and certain awe in the knowledge that here forever will stand a forest with its streams and lakes for the enjoyment of generations unborn who will always have a livelihood.

Pope & Talbot can point to many milestones of progress in its 103-year history, but the concept of permanence for forest and community at Oakridge may well become its most monumental achievement.



Heavy equipment is a "must" for getting the felled logs off slopes onto the giant trucks

AFA

Elects 1952 Officers

Johnston wins presidency in spirited contest. Seven new Directors, 21 honorary vice-presidents also named



Don P. Johnston, succeeds D. C. Everest as Association president

DON P. JOHNSTON of Wake Forest, North Carolina, has been elected president of The American Forestry Association for 1952, climaxing a highly successful and productive five years' service on the Board of Directors. He becomes the 23rd president in the Association's 77-year history.

Winner over Fred Morrell of Alexandria, Virginia, in the Association's first election under a multiple candidacy system, Mr. Johnston succeeds D. C. Everest, whose efforts toward organization expansion during 1951 bore singular fruit. Mr. Everest found that combined duties as AFA president and chairman of Marathon Corporation's board at Rothschild, Wisconsin, would not enable him to run for re-election. He will, however, automatically assume a seat this year on the Board of Directors.

Selected from a field of 15 candidates were seven new members of the Association's Board of Directors. Elected for three-year terms were: Dr. Elmer G. Peterson, managing director of the Utah Research and Development Foundation, Logan, Utah; Robert W. Sawyer, editor of the Bend (Oregon) *Bulletin*; Bryce C. Brown, secretary-treasurer, Muskingum Watershed Conservancy District, New Philadelphia, Ohio; Dr. Wilson Compton, Department of State, Washington, D. C.; and Erle Cocke, president, the Fulton National Bank, Atlanta, Georgia.

Named to the Board of Directors for two-year terms were: Miss Marie E. Gaudette, nature adviser for the Girl Scouts of America, New York

City; and Herbert W. Voorhees, president of the New Jersey Farm Bureau, Trenton, New Jersey. Mr. Johnston's election to the presidency creates one vacancy on the Board of 16 members, which, in accordance with the by-laws, will be filled by vote of the members at their next meeting.

Re-elected treasurer for one year was John M. Christie, vice-president of Riggs National Bank, Washington, D. C.

Twenty-one honorary vice-presidents were also elected for one-year terms. They include: Honorable Sherman Adams, Concord, governor of New Hampshire; Dr. George E. Condra, dean, Conservation and Survey Division, University of Nebraska at Lincoln; Ed Dodd, *Mark Trail* cartoonist, Atlanta, Georgia; Stanley G. Fontanna, dean, School of Natural Resources, University of Michigan, Ann Arbor; Walter K. Granger, U.S. Congressman, Cedar City, Utah.

Also: Col. W. B. Greeley, vice-president, West Coast Lumbermen's Association, Seattle, Washington; William L. Hall, consulting forester, Hot Springs, Arkansas; Palmer Hoyt, editor, *The Denver (Colorado) Post*; Evan W. Kelley, former regional forester, Missoula, Montana; E. L. Kurth, president, Southland Paper Mills, Lufkin, Texas; Kent Leavitt, farmer, Millbrook, New York; James G. K. McClure, president, Farmers Federation, Asheville, North Carolina.

Also: G. B. MacDonald, professor of forestry, Iowa State College, Ames; Walter H. Meyer, Yale School

of Forestry, New Haven, Connecticut; Lloyd E. Partain, Commercial Research Division, The Curtis Publishing Company, Philadelphia; Cornelia Bryce Pinchot, conservationist, Milford, Pennsylvania; W. A. Roberts, president, Allis-Chalmers Manufacturing Company, Milwaukee.

Also: William S. Rosecrans, chairman, California State Board of Forestry, Los Angeles; A. C. Spurr, president, Monongahela Power Company, Fairmont, West Virginia; William P. Wharton, president National Parks Association, Groton, Massachusetts; and Chester S. Wilson, Commissioner of Conservation, St. Paul, Minnesota.

All officers were elected by letter ballot of the Association's membership. Tellers in charge of tabulating the votes were Herbert Appleton, Robert D. Hostetter and Clint Davis, all of Washington, D. C.

A forestry figure of wide experience and reputation, "Don" (as Mr. Johnston is known to his host of friends) recently completed four years of service as president of the North Carolina Forestry Association. He received his early training with the U. S. Forest Service.

Inauguration this year of the multiple candidacy balloting resulted in spirited contests not only for the presidency but also for seats on the Board of Directors and the honorary vice president positions.

Membership on the Board of Directors gives all sections of the country representation, with the seven new Directors coming from Ohio, Georgia, Washington, D. C., New York, Utah, Oregon and New Jersey.

Managing Your Woodland

(From page 23)

afford the best opportunity to make annual or periodic cuttings. It does not mean the removal of only the best trees. Along with the older mature trees, the first cuttings should take inferior species and defective individuals in order to concentrate future growth at the fastest rate. The actual selection of trees to be cut may be by individual trees, groups of trees or strips.

Individual Tree Selection—In some stands scattered individual trees have reached the most suitable size for their best use. These may well be cut together with trees which are defective or poorly formed and are holding back the growth of younger well formed healthy trees. Despite random spacing, they can be reached if the roadways are carefully planned.

Group Selection Cuttings—In many stands the variations in the age, size and quality are by groups of trees rather than by single trees. The practical procedure is to log by selecting certain groups. In such cases, each individual group cut should preferably not exceed one-quarter acre. Again care should be exercised to leave fast growing, well formed trees for a future cut.

Strip Cuttings—Strip cuttings are sometimes made in softwood stands which are roughly of an even age or size throughout. The usual procedure is to clear-cut strips about the width of the height of the average trees in the stand with about twice that distance between strips. If practical, such strips should be at right angles to the prevailing winds. In a few years, when the cutover area has seeded in and the reproduction is well established, a second series of strips may be cut. In this way the entire stand is removed in two or more cuts providing thereby the basis of a new stand after each cut.

Pine Stands—Group or individual tree selection cuttings are good practice and easily executed in pine stands. The openings should be kept small, usually not to exceed one-quarter acre. On medium to light soil such selection cutting usually results in suitable pine reproduction. The rapid growing, well formed pines should be left to put on the maximum amount of quality wood.

When opening up a stand where

the trees are tall and of uniform size, too large openings permit wind-throw and sun-scald, and so cutting should approach individual tree rather than group selection cutting. (Sun-scald is an injury caused by sudden exposure of the trunks of trees to the direct rays of the sun. The evidence is loosened bark on the sunny side of the tree.)

Strip cutting is also a good practice in larger stands of pine. A combination of rather widely separated strips and individual or group selection cuttings between the clear cut strips is practical on the larger operations. In the area of the selection cuttings, particular emphasis can be given to improving the composition of the stand by eliminating the less desirable trees. The better trees will then grow faster and the next cut will be more profitable.

Hardwoods—Individual tree selection is the preferred method of cutting in uneven-aged hardwood stands, especially when oak predominates. Group selection cutting should not be over one-quarter acre in size and, if possible, spots should be selected where seedlings of desirable species are already established. In most of the yellow and white birch stands individual tree selection is especially recommended. Unless the selection cutting is light, however, sprout branches start out on the trunk and the trees commence to die back at the top.

Mixed Hardwood-Softwood Stands—Individual tree selection merging with group selection is desirable in mixed hardwood-softwood stands. Through the choice of species of trees selected for cutting, the percentage of softwood for future cutting may be greatly increased.

Spruce and Fir—Individual tree selection is the preferable method of cutting spruce-fir stands, though group selection is satisfactory where the stand includes various age sizes. Particular effort should be made to reduce the proportion of fir which is a short lived species and particularly subject to loss through insect attack and disease. The stand should not, however, be opened up too much because of the danger of wind-throw. Usually 50 percent of the volume of the stand should remain after cutting.

The overmature and small crowned firs which are crowding the more vigorous trees should be removed. It is especially important to leave the scattered spruce that may be mixed with fir. Very light cutting will guard against wind damage in spruce-fir stands which grow on flat, moist areas and on hillsides.

Group selection cuttings have been successful in maintaining suitable reproduction of spruce and fir where such cuttings are about one-quarter acre or less. In selecting the groups to be cut, areas of mature firs should be cut in preference to areas of spruce.

When an owner selects individual trees for cutting or makes small group cuttings in spruce-fir pulpwood stands, twitching the full-length sticks out to a yard for cutting into pulpwood is a more feasible practice than cutting and piling wood at the stump. On most spruce-fir lots the growth usually lends itself best to a combination of individual tree selection and small group cuttings.

Often in practice such selection cuttings will approach in appearance an irregular strip cutting and the main road layout will lend itself particularly well to subsequent individual tree and small group selection cuttings.

The location of roadways is the successful key to laying out a woodland operation. If strip cutting is used, each roadway will follow down the center of the cut strip. If individual tree or group selection is planned, the roadways need only be wide enough for a scout and team or even for twitching by log or tree length.

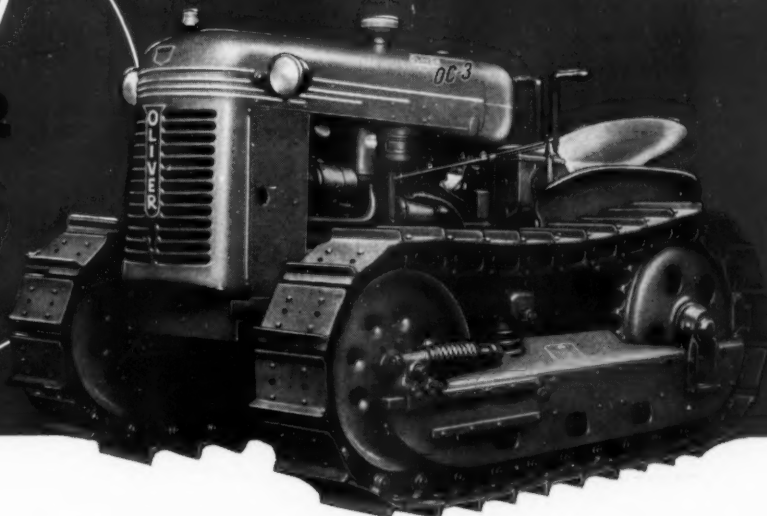
In a carefully planned operation the roadways can be laid out to give reasonable access to all the trees to be cut. After roadways are well established it is not difficult to extend them to new cutting locations as the yearly or periodic cutting plans develop in succeeding years.

When a woodland owner carries out partial cuttings as explained, or harvest cuttings which will be discussed at another time, it is important that they market their forest products advantageously. The County Foresters assist woodland owners in getting the best values for their stumpage, logs, or pulpwood. Forest markets will be discussed in another issue.

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Thirsty Acres

(From page 19)

at more than \$27,000,000. How was this made possible?

The old timers who settled in that area nearly a century ago were not the first to make their homes and gain a livelihood from the soil of the Salt River Valley. Centuries before, another people had dug canals and farmed the same region. Archaeology tells their story, although it does not know their name, whence they came, or where they went.

These people lived along the Salt and Gila Rivers at about the beginning of the Christian era and, by 600 A.D., their civilization had flourished to a point where they had excavated and maintained irrigation canals as large as ten feet deep and 20 feet wide. Since no one knows what name these people called themselves, modern archaeology refers to them as the Ho-ho-kam, an Indian term meaning "the people who went away." And go away they did in about the fifteenth century, leaving their dried-up canals and the traces of their pueblo-like villages of sun-baked adobe. Their disappearance is attributed to ultimate lack of water due to a long period of drought.

Years later other Indian peoples took their places, but none excelled the agricultural or engineering accomplishments of their predecessors. When conquistadors and Franciscan monks reached the area in the seventeenth century, they found the contemporary inhabitants "peaceful farmers subsisting themselves by means of agriculture," to quote from the Spanish records.

After the American Civil War, white settlement in the valley reached a point where more water was needed if the settlers were to survive. At first the white pioneers used ditches similar to, or even the same, as those used by the Indians. This worked for a time, but in the 1890's came a drought. Less and less water flowed in the Salt, the Verde, and the Gila Rivers. Water was doled out, six hours at a time, to the thirsty acres. Armed men patrolled the canal banks and guarded the head gates. Some men shot other men who had been their neighbors—a few hours of water were worth more than a man's life.

Then, in 1900, a flash flood occurred, washing away the temporary

diversion dams of brush and earth. Tons of needed water roared down the river beds and were gone within a few hours.

That was the beginning of a concerted drive for a series of permanent diversion dams, structures that could withstand flash floods, and behind which could be stored water from the rainy years to irrigate crops in the years when rainfall was scanty and inadequate. This was made possible by the Reclamation Act, passed by Congress in 1902. In the Salt River Valley owners of 200,000 acres of farm land banded together (not without considerable preliminary argument) to form the Salt River Valley Water Users Association. Engineers went to work and the first of a series of six dams was begun.

That first dam, named in honor of President Theodore Roosevelt, was completed in 1911. Its construction was no mean feat of engineering. The dam site, at a narrow point in the river, was 65 miles from the nearest railroad. Every ounce of machinery, every ton of supplies, had to be transported in high-wheeled wagons drawn by teams of 20 mules, over rugged Arizona mountains, canyons, and desert.

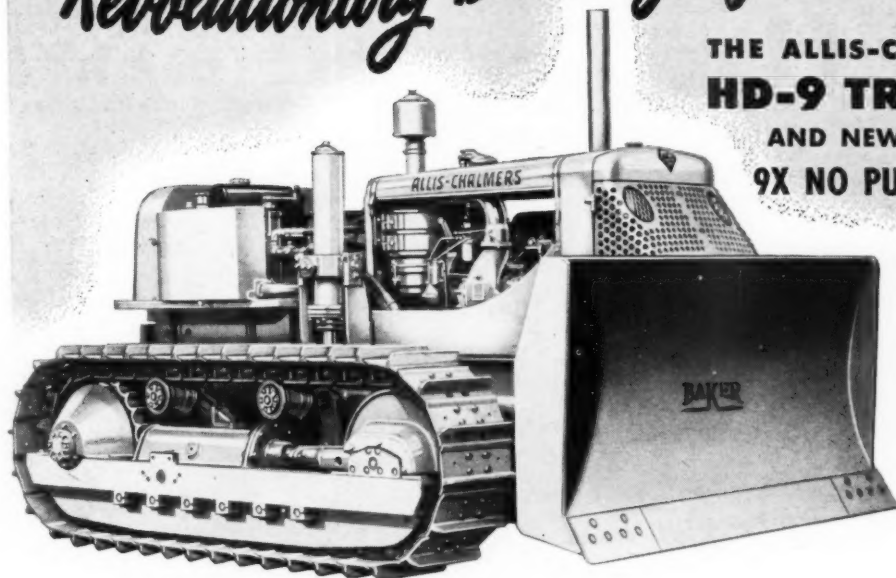
It took five years to build the dam—to cut nearly 350,000 cubic yards of native stone and seal them into place with an equal number of barrels of cement. Finished, Roosevelt Dam is 184 feet thick at the base and 16 feet thick at the top. It stretches for more than a thousand feet across the canyon, rises 284 feet above the native bedrock, and can impound 1,400,000 acre feet of flood water.

Since then, three more dams have been built on the Salt River and two on the Verde, and together the six have a total storage capacity of 2,200,000 acre feet of water. Other dams on the Salt, moving downstream from Roosevelt Lake and Roosevelt Dam, are: Horse Mesa Dam which impounds Apache Lake, Mormon Flat Dam which does the same for Canyon Lake, and the Stewart Mountain Dam which forms Saguaro Lake. On the Verde are Bartlett and Horseshoe Dams. A final diversionary structure known as Granite Reef Dam lies below the junction of the Salt and the Verde.

(Turn to page 40)

NOW! Revolutionary Bulldozing Performance

THE ALLIS-CHALMERS HD-9 TRACTOR AND NEW BAKER 9X NO PUSH-BEAM DOZER

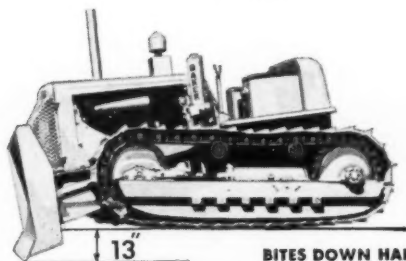


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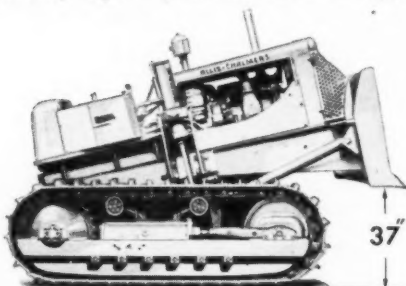
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This major bulldozer design improvement brings you new, greater dozing capacity with narrower, tree-saving width blade . . . new low original cost . . . new servicing ease and operator comfort . . . new clearance underneath.

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BITES DOWN HARD
Full 13-in. drop below ground, positive down pressure plus steep angle of penetration means fast digging.



HIGH LIFT — Full 37 in. above ground. Excellent for pushing over trees and stumps and clearing brush.

A GREAT NEW TRACTOR. This new Allis-Chalmers HD-9 Tractor has power, weight and balance that puts it in a class by itself — never such traction . . . such pushing and pulling ability.

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NO PUSH BEAMS. A completely new idea in bulldozer engineering, the 9X blade is mounted directly to the HD-9 main frame. Tractor main frame and dozer are raised and lowered as a single unit.

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BIG DIRT MOVER. Because of extra clearance, greatly increased track oscillation and better balance, this team is a phenomenal performer in mud and tough going. And with blade fully six inches higher, capacity is kept on par with conventional blade.

SIMPLIFIED SERVICING. 1,000-hour lubrication of truck wheels, idlers and support rollers. Dozer mounting does not interfere with engine accessibility. No removal of major tractor assemblies. Hinged grill swings out for easy access to dozer hydraulic pump, or to clean radiator core.

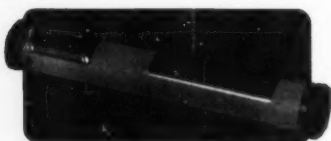
EASY TO OPERATE. Just by pulling a single lever, operator can shift from any of the six forward speeds to any of the three high speed reverses. This, plus narrow, frame-mounted blade makes the HD-9 particularly fast and maneuverable. With no spring deflection, blade responds immediately and positively to control levers.

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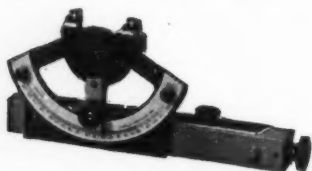


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Thirsty Acres

(From page 38)

Thus it was that the area around Phoenix, in the Salt River Valley, was again able to support a thriving agricultural population and to substantiate the prophecy of the classical-minded old timer who, looking at the ruins of the Ho-ho-kam canals, predicted that the region would arise from its own ashes, like the fabled bird of antiquity. So it was that Arizona's present capital city was named for that reincarnating bird—the Phoenix.

But even the water supplied by Roosevelt and the other dams was not enough for Arizona's thirsty acres. Before long, forward thinking Arizonans were looking elsewhere for more water. And where did they look? To the Colorado River, the stream that flows through the state for 300 miles and forms its western boundary for 300 more.

The Colorado is a mighty stream, and a muddy one. "Big Red" is its nickname, because of the tons of silt its water carries. At a measurement point in the Grand Canyon, for example, studies revealed that the river carries past any given point an average of nearly a million tons of sand and silt every 24 hours. Thus the saying has arisen that the Big Red's waters are "too thick to drink and too thin to plow."

But the Colorado River is not Arizona's alone. Seven states can claim a share in it. In its journey to the sea, the Colorado River carries water from six of those states, travels through four, serves as the boundary between two more, and for a few miles even becomes international dividing line between the United States and Mexico. Truly, the Big Red is a cosmopolitan river. The states affected, of course, are Colorado, New Mexico, Arizona, Utah, Wyoming, Nevada, and California. No one of them can lay complete claim to the water, nor can the United States, or Mexico.

There are certain specific regulations dealing with water and, in the West, the so-called "law of appropriation, or of prior use" is one of them. According to this, if a man downstream has established his right to use a certain amount of water, no later-comer on the stream above him can prevent him from obtaining the water. This rule has applied to the

actions of individuals, and is also applied to the action of states.

Therein lies the seed of the present water-quarrel between Arizona and California. Arizona claims California is dumping vast amounts of excess water into the Salton Sea in order to build up a big total of "use." Arizona maintains that her own water needs are immediate ones, and that her western neighbor is wasting now as basis for possible future claims.

But the controversy is not a recent one. It began decades ago. To deal originally with the inter-state situation, the very important Colorado River Compact, sometimes called the Santa Fe Compact because of the place where it was signed, was drawn up in 1922. This granted states in the "Upper Basin" a total of 7,500,000 acre feet of water a year, while the "Lower Basin" states were to receive 8,500,000 acre feet—when, where, and if they want to use it. Water for the Lower Basin was further divided as a result of the Boulder Canyon Act, passed by Congress in 1928, to take care of water stored by Hoover Dam. By treaty, Mexico gets 1,500,000 acre feet of water a year, while Arizona and California are now bitterly embroiled in a dispute over how much each state should get of the remaining Colorado waters.

Whatever the ultimate result, the craving of both Arizona and California for water only exemplifies the need that is being felt more and more keenly in other sections of the country. It is not only the "Great American Desert" whose acres are thirsty. The need for water and water conservation becomes more vital throughout the United States every year.

What is causing this increasing thirst? And what can be done to soothe it?

Perhaps, again, we can turn to Arizona's Salt River Valley, an area that constitutes one of the most successful reclamation projects created in this country, for some of our answers.

Since 1932 the federal government has been carrying on rather extensive studies of the Salt River watershed region. In general, the research, which is being conducted in the Sierra Ancha Experimental Forest and vicinity, seeks to answer a variety of questions.

(Turn to page 42)



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Forestry Division
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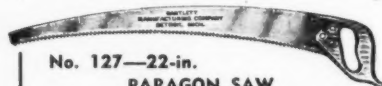
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Thirsty Acres

(From page 40)

The first of these questions is: What is the relation between annual precipitation and the yield of water and sediment from a watershed that has natural cover; and from a watershed where that cover had deteriorated because of fire, drought, or from over-use by livestock?

Second, how do different plants, different soils, different slopes, or combinations of these, influence water yield and erosion? Third, what effects do proper grazing and overgrazing, proper logging and destructive logging, proper roadbuilding and improper roadbuilding, have on the vegetation that forms the productive soil covering of a watershed; what effects do they have on water yield, soil erosion, and reservoir sedimentation?

And finally, what method or methods of management will permit economical use of watersheds without endangering the resource values; how best can deteriorated watersheds be restored; what measures can be used, and which are practical for extensive operations?

In the 19-year period since studies

first began, Sierra Ancha's fenced and unfenced plots, ungrazed and overgrazed areas, lysimeters, rain and snow gauges, have provided vast amounts of information as to how land can be used and water conserved to the best advantage of farmer, rancher, cattle or sheep man, and lumberman alike.

Meanwhile, other studies are also being conducted in various parts of the country in the effort to determine how watersheds can best be managed so that all citizens may benefit—whether they actually gain their living from the soil or merely seek recreation and relaxation in the out-of-doors. Whether the public as a whole will pay any attention to the findings of these studies, and whether proper steps will be taken to remedy situations that need remedying, remains to be seen.

The "Great American Desert" may be a thing of yesterday, but it is also a possibility for tomorrow. Yet, on the other hand, its recent conquest, and the beneficial methods used to do this, can hold out hope and promise to the presently increasing thirsty acres of this Nation.

Nomads of Europe's Forests

(From page 25)

The Swedish government maintains boarding schools where, deep in the forest, the Lapp children are taught to read and count during the long and almost perpetually dark winter. With spring, the nomads drive and ski to the school from every direction to meet the children. The latter, with their teacher, stream away from the little wooden building on skis, and with a whoop the whole community heads through the forest towards the cool uplands, bare of trees.

All told, the nomad spends some eight months of the year in the low-land forests, and inevitably the forest is prominent in his tribal laws and lore.

For example, forest rivulets are the home of devils. I learned this from my friend Jonas-the-Wolf-Hunter who struck a wooden cup from my hand because I had not looked closely at its contents before drinking. His own mother had died through similar carelessness, swallowing a devil that, masquerading as a tiny tadpole, grew

into a big frog in her intestines, with unfortunate results for its host. To escape her fate one must never drink from woodland streams without first inspecting the water for harmful sprites.

The bright forest glades are the playground of the kindly sprites and gnomes. Their footprints may be seen clearly in the snow. These the mere mortal must treat with respect; he had better not erase them with his own footprints, for this would antagonize even the kindest sprites and in revenge they would surely attack the trespasser's reindeer.

Not only gnomes live amid the pines and boulders. Deep in the gloom of the sub-Arctic forests live a whole galaxy of mental images—tiny reindeer tended by tiny little men, tiny woodsmen with tiny axes, even tiny bears.

Yes, the forest nomad is a child by civilized standards, but in his childishness he has found a happy way of life.



FOREST PEST CONTROL IS FOREST MANAGEMENT, TOO

Forest management means many things in modern America. It means protecting woodland from fire—it means harvesting practices that leave seed trees or young timber for tomorrow's wood crops—it means protecting trees from destructive grazing.

Forest management also means guarding woodlands from tree-killing insects and disease. Here, you see an airplane spraying an insect-infected forest.

Every year the forest industries, and state and federal forest agencies cooperate in carefully planned campaigns against insects, disease and fire.

Spraying operations like this save billions of feet of future lumber and millions of tons of future wood pulp for the nation. This is one of many examples of effort in the never-ending job of protecting and growing **MORE TREES FOR AMERICA.**

THE AMERICAN FORESTRY ASSOCIATION

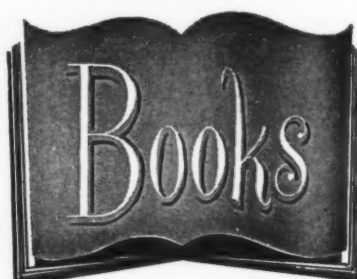
Born To Battle, by S. Omar Barker. Published by The University of New Mexico Press, Albuquerque, New Mexico. 187 pages. Price \$4.

A collection of fourteen short stories from the Western Animal Kingdom—written by a veteran outdoorsman and nature writer. Called "factual fiction" by the publishers, these lively stories are about the hooved, horned and clawed people of mesa and mountains, their whimsical escapades with each other and with their human neighbors.

Exploring the National Parks of Canada, by Devereux Butcher. Published by The National Park Association, Washington, D. C. 84 pages, illus. Price \$1.50.

A complete and thorough coverage of the National Parks System and game preserves in Canada authored by a field representative of the National Parks Association. The book is illustrated by an excellent group of photographs giving highlights to the scenic beauty of the subject.

American Woods, by Shelley E. Schoonover. Published by Watling and Company, Santa Monica, Cali-



When ordering books—any book—remember that your AFA membership entitles you to a ten percent discount. Order through the Book Department, The American Forestry Association, 919 17th Street, N.W., Washington 6, D. C.

foria. 250 pages, illustrated. Price \$7.50.

A comprehensive reference for the craftsman, hobbyist, designer or artist, this volume offers detailed data on the general characteristics of trees, locations and uses to which wood may be put. The author places emphasis on the beauty, workability and utility of woods available to the craftsman and hobbyist.

American Resources, by J. Russell Whitaker and Edward Ackerman. Published by Harcourt, Brace and Company, Inc., New York 17, N. Y. 497 pages, illus. Price \$6.75.

Based on the premise that material resources are the foundation of our national power, the authors present the existing problems with somewhat of a new slant, and arrive at a more hopeful conclusion than most previous texts on this subject. They adequately take into account the social and economic and political setting of conservation problems, creating an awareness of the complexity of the various factors involved.

Both authors have long experience in the field of conservation resources, and are qualified to speak authoritatively on the need for a widespread recognition and necessity for a wise conservation management of natural resources.

Spray Chemicals and Application Equipment, by J. A. McClintock and Wayne B. Fisher. Published by Horticultural Press, LaGrange, Indiana. 320-pages, illus. Price \$6.

The result of six years of research and collection of data, this reference book is divided into two parts, the first of which gives historical background of many chemicals and detailed information showing how they are manufactured. Part two is a complete discussion describing almost every type of sprayer and dust available for use in applying spray chemicals. This text should prove a worthy reference to chemists, teachers, students, and growers of fruits, flowers and vegetables.

An Illustrated Manual of California Shrubs, by Howard E. McMinn. Published by the University of California Press, Berkeley, California. 671 pages. Price \$6.50.

A systematic and descriptive account of the shrubs of California, giving attention to about 800 species and 200 varieties of native shrubs, woody vines, subshrubs, woody cushion plants, and halfshrubs. With the exception of 11 species of cone-bearing plants, the entire book is devoted to angio-sperms or broadleaf shrubs. Descriptions are clear and complete and include information on biology, cultivation and distribution. Identification is made easier by 775 reproductions of pen and ink drawings and 56 full-page photo prints. A bibliography, list of species and their meanings, and a general index serve to simplify use of the manual.

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A First Book of Tree Identification, by Matilda Rogers. Published by Random House, Inc., New York, New York. 95 pages, illustrated. Price \$2.50.

A primer to help the beginner identify at least 31 species of trees familiar to the United States and Canada. Simple, non-technical and brief descriptions draw attention to the larger and more obvious characteristics of each tree designated by common name. Two photographs for each tree show typical leaf and branching section with leaves. The author admits the sequence of tree descriptions is not botanical but an order she chose because the student will find it easier to remember. Photographs and descriptions are added to demonstrate leaf arrangement, tree functions, characteristic bark, and botanical terms. A helpful guide because of its large pictures and brief, easy-reading descriptions.

Guide to the John Muir Trail and the High Sierra Region, by Walter A. Starr, Jr. Published by the Sierra Club, San Francisco, California. 130 pages. Price \$2.75.

A fourth edition of the High Sierra guide book, compiled to serve those nature lovers interested in the accessibility of the Sierra trails, and in further exploration of the aspects of the ever-changing scene.

The author, whose name ranks among the first in California mountaineering, was lost in The Minarets in 1933, and this volume was published posthumously. Of necessity each successive volume has had extensive revision, but it still retains the original form and many directions of its author.

Let Them Live, by Dorothy P. Lathrop. Published by The Macmillan Company, New York, New York. 80 pages, illustrated. Price \$2.

In this animal book, the author combines a down-to-earth understanding with scientific knowledge in determining how every creature contributes to the interdependence of all life. In discussing the crow, swan, antelope, chipmunks and numerous other animals she shows how each figures in the balance of nature, discussing animal habits and characteristics.

Numerous sketches by the author lend further authenticity to the narrations.



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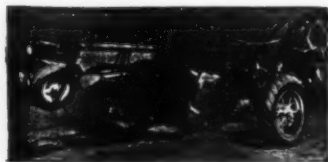
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3. Drown your campfire, then stir and drown again.
4. Ask about the law before burning grass, brush, fence rows, or trash.

Peace Comes to Montana

(From page 11)

goes to cattle and sheep instead of big game and recreationists. The class was given irrefutable examples of where this out-of-balance commercial grazing at the expense of wild game proved costly to ranchers when the starving deer and elk invaded private fields in search of feed.

At the same time there are instances where the state fish and game commission has entered into contracts with the Forest Service in certain areas, agreeing to allow a big game herd to build up to a certain number compatible with good grazing and then controlled by open seasons. Instead, the season kills are limited to antlered bulls and the herds grow far beyond contractual agreements.

So far the politically potent sportsmen's associations in western Montana have not been too successful in convincing Forest Service personnel the forests should have the maximum number of game animals with only the surplus, if any, going to domestic livestock. They press loudly for their demands to the state fish and game commission, a politically appointed board dependent on income for salaries and operations from sportsmen's licenses.

This dependence, plus the instability inherent in a political commission, precludes the broader viewpoint and consistent program so needed in this situation.

The sportsmen's opinion of the ranger and his range management was ably presented by one of the best balanced and most widely respected spokesmen for sportsmen in Montana, Stanley J. Ware of Billings. In a quiet, straightforward manner, with plenty of time in between thoughts to enjoy his pipe and listen to rebuttals, Ware told the rangers what average sportsmen think of them.

"We don't question your technical training in timber and range," Ware stated, "but we're doubtful of your training as big game managers. Even though we may blame you for all the ills on your forests, we do respect your position and the responsibility that goes with it. As a class, you're much too clannish. You need to get out and take more part in community affairs."

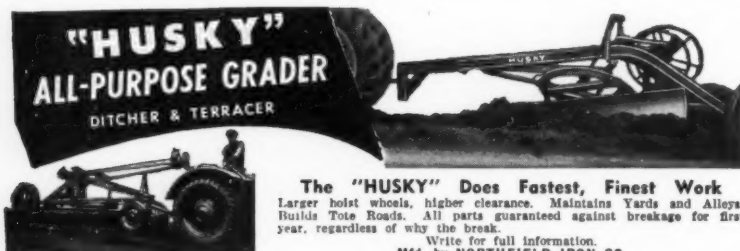
Primary point in what the sportsmen expect the forest officer to do is "correlate your views with those of the state game department so there won't be this release of divergent reports and recommendations that only confuse the sportsmen as to the real conditions," Ware continued.

A plea was made for help in solving the problem of ranchers' lands being posted on roads entering national forests. Such roads block off public land and virtually make private hunting preserves out of them. "The sportsmen want you to furnish guidance in the things that need to be done in the interests of game," Ware said, "but you can't do this by being dictatorial. Cultivate sportsmen, become members of their organizations, win their friendship as individuals. It will broaden your viewpoint and put you in a better position to make them see things your way."

Ware concluded with a statement that had become progressively obvious to the one-interest representatives present: "We know the national forests belong to all the people. We're counting on you boys to look after them—for all the people."

The success of the school was apparent by midsummer in the number of controversial cases regarding permittees and allotments that have been settled amicably. Also, there have been increasing instances of cooperation by livestock men in visiting ranges with rangers, observing conditions, recommending progressive usage and then abiding by the conditions agreed upon.

Forest Service officials now have figures showing that for the summer of 1951 Montana's forest grazing was more equitably distributed among the various interests than ever before. In their region at least, management of forest grazing is no longer a fighting term.



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AMERICAN FORESTS Magazine

Desert Flower

(From page 15)

the fiber were prepared from leaves collected in Texas and New Mexico.

Only one experiment with production was attempted in World War II. A small mill was set up at Kingman, Arizona and financed by a government agency. The mill was never operated after an initial trial run.

Agricultural experts say four major problems have to be solved before yucca fiber becomes an industry:

Cheap transportation of the raw material to the mill and development of portable fiber cleaning equipment.

A practical process for extracting the fiber.

Regrowth of leaves. (Once the leaves are removed it takes about five years for a new crop to come back.)

Simplified harvesting methods.

Ironically, the Indians of the Southwest have been using yucca fiber since before the coming of the white man. Imprints of fabrics and cords woven from this desert material have been found in ancient cliff dwellings. The cords were used for snares for small animals. Yucca fiber became sandals, mats, baskets and trays. Indian women have even been known to weave waterproof bottles of the fiber.

Mexican families have used the yucca strands, too. They gather the leaves while they are still green. Then, when needed, the leaves are held over a flame to soften the tissues holding the fiber. The edges are then stripped off, and the strips tied end to end to make them longer. These crude twines are then used to tie bundles or stalks of grain or fodder.

Known by many names—Spanish daggers, Spanish bayonets, Lord's Candle, and many more—the yucca has served man for centuries. In addition to the many woven products, the Indians found other uses. They took their luckless captives and tossed them into a mass of the sharp "daggers" as a method of torture. The screams of the captives were reported to have been especially amusing to Apache women.

Early American settlers in the Southwest found both the leaf and the flower useful. The hard leaf-points made good needles and were used for sewing sacks. Yucca cord was used to hang meat in the smoke-house. Yucca blossoms were once

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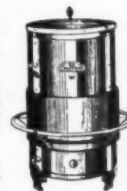
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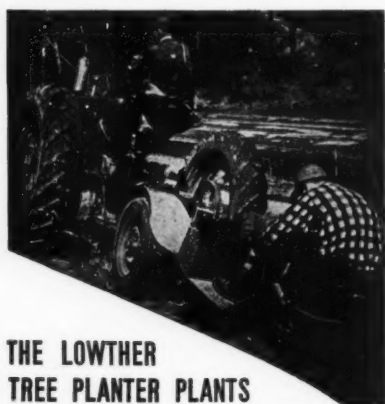


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gathered and cooked as cabbage or made into pickles. Yucca leaf-points were instruments in the early rancher's medical kit.

Sometimes when ranchers are faced with an emergency need for stock feed, the leaves of the yucca are chopped for forage. Range cattle learn to muzzle into the sharp leaves and bite out the tender flowers.

Cousin to the mariposa, the hyacinth, and the onion, the yucca is sturdier, more stately and beautiful than any other member of the lily family.

Tourists approaching Boulder Dam through the arid ranges of Northwestern Arizona may admire broad, spectacular stands of the desert plant. This land southwest of Lake Mead is the home of one of the largest stands of yucca in the Southwest. The daggers blossom full and white as far as the eye can see across the Mohave Desert.

They thrive, too, along the Gila River in Southern Arizona and farther south along the Mexican border. Stands appear frequently in southern New Mexico and in west Texas. One type, *Yucca louisianensis*, grows as far east as Louisiana.

Other varieties, especially the more common *Yucca elata*, can be seen throughout the region, and transplanted specimens can bloom as far north as the Great Lakes, if properly nursed. The "daggers" are often used as ornamental plants.

As the yucca prepares for its seasonal grandeur, it forms a cluster of buds along its long, thick, asparagus-like stalk. Each bud opens into a waxy white bell-shaped blossom—six petals and six stamens to each flower. The Lord's Candles are a huge panicle of flowers, rising out of the center of the leaf mass, in some varieties, such as *Yucca treculeana* (called "pita" by Mexicans), rising as high as six or seven feet.

Time of blossoming varies. *Yucca rupicola*, commonly called twisted-leaved yucca because of its slightly-twisted, finely toothed leaves, or bear grass, produces greenish white blossoms in June. *Treculeana*, also called "Don Quixote's lance," blooms from Christmas to April. It displays huge clusters of pinkish white blooms usually in February or March. The short-leaved, dark-green *Yucca louisianensis* brightens east Texas during March and April. *Yucca elata*, most common of the varieties, has been seen in full bloom during the heat and dust of July.

The blossoms of this desert arsenal present one of nature's best examples of teamwork. There is a strange alliance between the yucca and the pronuba moth. When the plant is in full bloom, this little creature wings its way by night to a blossom, gathers her fill of pollen, neatly rolls it into a pellet and carries it to the flower of an adjoining plant. The seed vessel of this yucca she then punctures, deposits in it a setting of eggs, and clambering up the pistil of the flower, she pushes her pellet of pollen down into the stigmatic tube to insure fertilization of the seeds. Weeks later, infant grubs are nosing about and hungrily consuming the plump seeds. Not all of the seeds are eaten. The remainder are left to start another generation of yuccas.

But what will the next generation bring? And the next? Will man some day unravel the problems involved in producing yucca fiber profitably? And, if he does, will this beautiful desert flower go down to the hacking of a harvest knife? Or will we have learned our lessons of conservation and cultivate this majestic plant . . . for its beauty and its usefulness?

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Hooks for 1/2" or 3/4" Wire Rope	4.50 each

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Pumice, Santa Fe Despoiler

(From page 22)

pand their operations within the Santa Fe Forest.

In one of the more beautiful valleys of the Jemez range lies the ranch and orchard of Jim Young. The apples from the Young ranch are known the nation over. "Golden Delicious," they are called, and they command a fancy price. A couple of years ago pumice mining operations were started on the mountainside above Jim's ranch. In a very short time the erosion, resulting from those operations began to clog the irrigation system of the ranch. (Pumice dust will float on water).

Rancher Young raised such a howl and took such vigorous and prompt action that the miners moved away. If they hadn't, the ranch would have been ruined. At it was, Young spent thousands of dollars repairing the damage done to his water system by pumice and erosion tumbling down the mountainside for just a few short months.

The Forest Service does what it can to check the destructive practice of tufa mining within the Santa Fe. Bear in mind, the Service has no quarrel with mining per se. It has no objection to the removal of minerals from lands under its jurisdiction. It is the *method*—already explained—that causes the objection.

Forest Service officials in Santa Fe have asked pumice mine operators to please replace the topsoil that has been bulldozed into piles and rows and plant it to seed after they are through getting out the pumice. I saw no evidence whatever that this request is heeded. In addition, the Service has placed signs along the roads in the pumice mining areas which read: "No Tufa Mining or Tree Cutting Permitted Within 400 Feet of Road." Legally, these signs can be disregarded. They frequently are, and there is nothing the Forest Service can do to prevent a miner from removing pumice clear up to the very edge of a

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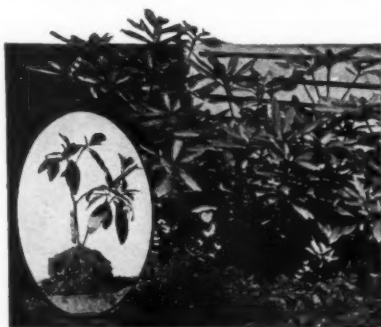


Photo: Rhododendrons planted 3 years.
Insert: Kalmia, on arrival.

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4-6 ft.	\$14.00	\$125.00		Palustris (Pin)	5-6 ft.	29.00	160.00
6-8 ft.	18.00	150.00		Rubra (Red)	5-6 ft.	20.00	135.00
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4-5 ft.	32.00			SORBUS (Mt. Ash)		(10)	(100)
JUGLANS nigra		(10)	(100)	4-5 ft.	18.50	160.00	
4-6 ft.	19.00	150.00		TILIA (Amer. Linden)		(10)	(100)
LIRIODENDRON		(10)	(100)	4-5 ft.	15.00	120.00	
LOCUST (black)	4-5 ft.	9.50	85.00	ULMUS (Amer. Elm)		(10)	(100)
MULBERRY tartarica		(10)	(100)	5-6 ft.	13.50	125.00	
3-4 ft.	7.50	25.00		Pumila (Siberian)	5-6 ft.	13.50	125.00
POPLAR Lombardy		(10)	(100)				
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4-5 ft.	11.00	95.00					
6-8 ft.	22.00	200.00					

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Forest Service road. And tufa quite
often occurs in abundance in just
such locations.

Furthermore, the majority of pu-
mice mine operators in the Santa Fe
don't even bother to take out a pat-
ent. They don't need to, under exist-
ing mining laws. They simply dig
out the tufa on one claim and move
on to another. Of what use to them is
a tract of land that is denuded of
every living thing? Taking out land
patents costs money and places the
property on the state and county tax
rolls. Leaving it as a claim avoids
such taxes.

What has Merker and his staff in
Santa Fe nearly frantic with anxiety
is that they never know where a pu-
mice miner will strike next. Mining
claims are filed in the county court-
house, not at Forest Service head-
quarters, and as fast as one claim
runs out of tufa, the mine operator
files another. It would take a regi-
ment of clerks to keep up with the
filing of claims alone.

So if there was ever a free sleigh
ride, the pumice miners that are op-
erating in the Santa Fe National For-
est have it. They have all the pumice
they can find for nothing. They can
use the Forest Service roads at no
cost to them whenever it suits their
purpose. And they can do absolutely
anything they want with the land they
claim under the present mining laws.
At the risk of being repetitious, the
U. S. Forest Service is completely
powerless to halt or curb in any way
the practice of mining for pumice as
it is carried on today within the con-
fines of the Santa Fe National Forest.

What burns me up is the utter in-
difference displayed by the mine own-
ers. If you or I owned a tract of land
and leased the mining rights thereon,
you can wager better than even
money that we are not going to let
an outfit completely ruin our land.
We are going to take into considera-
tion the timber values on that land
and see to it that the land itself is left
in a state that will assure future pro-
ductivity.

Not so with the tufa mine operators
on the Santa Fe. The land belongs to
the Forest Service—it is public prop-
erty, and to hell with it. They can
do what they damn please with it.
They simply do not care about the
rights of others in the land they are
ravishing, nor in the future welfare
of so important an economic resource
as the Santa Fe National Forest.

After our illuminating trip through
the Santa Fe, I drove to Forest Ser-
vice headquarters for Region Three in

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Albuquerque. There I interviewed W. G. Koogler, assistant chief in charge of lands. Koogler corroborated in every detail what Merker and Hunter had said and what I had seen. He added the final fillips to the situation and furnished me with further facts. Briefly the information is this:

The Santa Fe National Forest is slightly under one and a half million acres in extent. Of this area, it is estimated that some 300,000 acres contain pumice in commercial quantities. This is a most conservative estimate. It is probably much more. It most certainly is not less.

At present there are between ten and 12 known pumice mine operators within the forest boundaries. This does not mean that there are only a dozen mines in actual operation. Far from it; several mine owners have numerous operations going on simultaneously.

As for the number of claims filed—nobody knows, for nobody can keep track of them. Koogler estimates between one and two thousand as a very conservative guess. It is likely there are many more.

Pumice mining is just getting started. The demand for building blocks of the material is becoming nationwide. In fact, one outfit digging in the Santa Fe right now ships from coast to coast from the rail siding at Domingo.

Already the damage being done to the Santa Fe is more than appreciable. As previously stated, some of it can be seen from a distance of 20 miles. But it is only the beginning.

An estimated more than one-fifth of the forest area is right now vulnerable to the ravages of present day tufa mining. If that entire area is exploited and given over to the bulldozer and cat, the total cumulative damage would be horrendous. In fact, there wouldn't be much left of the Santa Fe National Forest.

Do not get the idea that the Forest Service is against all mining operators. In fact, the Service encourages many of them. It is the *method*—not the actual mining, that the Service violently opposes.

Certainly, it should be in the public interest to determine what is the best land use, the primary purpose of any national forest. Unless the pumice or other mineral value is sufficient to protect other values or to restore them, it hardly seems logical that it is in the best interests to allow mineral development on public lands. Among suggested remedial measures

is a proviso that all pumice mine operators be compelled to replace the topsoil after they have finished digging on any given area. They should also plant grass and trees on the denuded tract.

That's the procedure followed on national forests in the East, where later laws and Acts of Congress make the mining laws inapplicable and provide for disposal of all mineral by leasing. Similar types of mining are currently allowed by permit in Ohio and West Virginia, and reasonable estimates for the required rehabilitating, restoring and replanting of the land come to no more than \$100 an acre.

Only a revision of the mining laws can right the wrongs in the West. Perhaps the wisest course from a good land use standpoint is to place all mineral disposal on national forest land under the provisions of a leasing act similar in principle to the Mineral Leasing Act of 1920. That would protect the public interest, provide rentals and royalties, and require development of minerals within a given period authorized by the lease. At the same time the legitimate miner would be assured access to all mineral deposits which, in the public interest, should be developed, and he would have use of so much of the

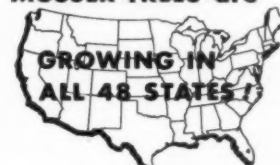
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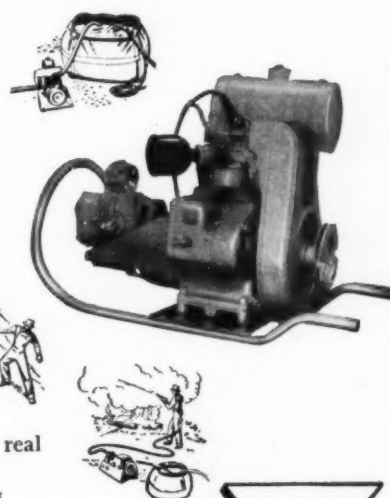
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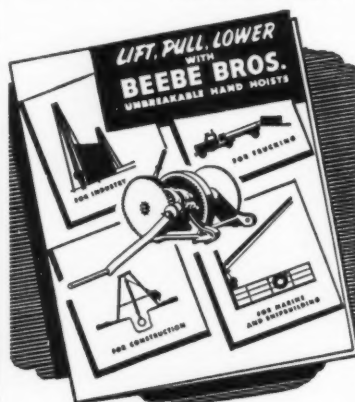
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surface as is reasonably needed for efficient operation.

The state of Pennsylvania has effective laws to regulate strip mining for coal. It seems such steps should be taken with the pumice miners of the Santa Fe. That would be small payment, indeed, for what they are now getting for virtually nothing.

In the final analysis, it is entirely within the bounds of possibility that if present mine operations continue, the slopes of the Jemez Mountains in the Santa Fe National Forest will become as bare of vegetation as the Pyramids of Egypt—and just as productive.

NEXT: You're Being Robbed.

Your Shade Trees

(From page 26)

sions frequently are seen on the southerly sides of trees and take the form of deep vertical frost cracks, or frost shakes, as they are sometimes called.

Steady cold weather is seldom responsible for such injuries but when rapid freezes occur or when a warm sun strikes the trunks during the day, followed by a sharp drop in temperature at night, the resultant contraction sometimes results in a separation of the woody tissue along the lines of the medullary rays. When the temperature moderates, the cracks close and it is difficult to find them, especially after a growing season. This type of wound rarely heals entirely by itself, however, and comparable conditions will bring about similar results until, after a few years, a permanent ridge may be formed. Old wounds of this type frequently exude a sour sap called slime-flux which makes healing very difficult.

A frost crack cannot be prevented. However, its recurrence and subsequent injury sometimes may be eliminated by placing bolts through the tree at right angles to the plane of the crack. An old frost crack requires more thorough attention and complete cavity treatment may be required for a valuable shade tree.

One of the most serious types of winter injury is that known variously as die-back, winter sun-scald and winter drying. It occurs, particularly on evergreens, when a warm sun and strong wind cause rapid thawing of

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Date with an Emperor

(From page 17)

ten, or 200 board feet. A ten-inch collect shotguns and shells, and in a few minutes a truck load of Indians, Eskimos, and Crackers took off down the sandy beach into Emperor land.

I've seen the sky herring-boned with Canadian honkers, and weaving the formations of white fronted geese and blues and brants. It was the first time I had ever seen a solid curtain of big birds, trading back and forth from an arm of the Bering Sea to the hills.

Our host dropped us at intervals of 400 yards along the beach.

"Remember," he called, "four's the limit."

I walked to a high sand bank that flanked the beach. Before the truck was half mile away, a string of 20 geese came over so close I could have hit them with my hat. I should have used my hat, because I missed them clean, with both barrels. I loaded again as three of the birds sailed in from open water, headed for the sand spit below me. They put down their landing gears and I opened up. Only when they turned I saw they were too far out over the water. My shot string had not even cut a feather out of the flight. By this time I was talking to myself.

I winged the next bird. He tumbled to the beach, bounced and started on a dead run for the open water. I finished him with the other barrel. I

picked my shots and killed the next three clean. I piled them in a heap on the sand and examined one. He was a beautiful bird, with a speckled, silver-gray breast, a dark brown throat and a white head and nape, slightly stained with russet.

I stood in the open, waiting for the truck while wave after wave of the birds swept over me. They seemed entirely oblivious to my presence, and turned only when I moved suddenly. As far as I could see, the sky was filled with geese.

The truck stopped ten feet away before I saw it. Lee was riding the tail gate.

"Did you ever see anything like that?" I asked.

He wagged his head slowly, without answering. It had been an incredible sight that could have happened a hundred years ago, but not today. In 20 minutes we had killed four geese each. We could have piled the body of the truck high enough with Emperors to sink it in the sand.

"It's my first Emperor," I said.

Elliott Jones made an amazing statement.

"They're not as plentiful as they once were," he said. "The birds are tame. Indians and Eskimos, exempt from the game laws, have killed them on the nesting ground and taken eggs by the millions. If the slaughter is

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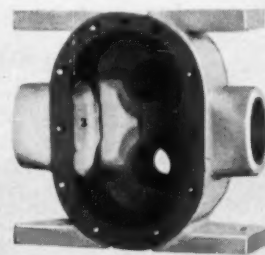
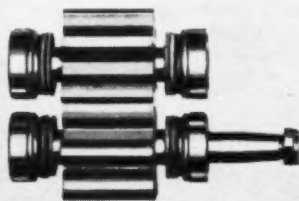
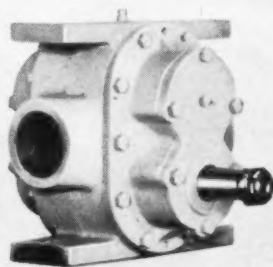
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not stopped, they may be killed out in time."

"Anyway," Dennis claimed, "this is more productive than hunting bears."

"You fellows been bear hunting?" Jones asked.

We nodded.

"Gosh," he said. "I wish you'd been here this morning. There was the biggest brown I ever saw feeding in the huckleberries up by the lake."

Lee shot a look at me.

"Let's get him."

But Dennis turned his thumbs down.

Cold Weather Crop

(From page 14)

log of the same length would scale only 50 board feet.

We had gone over the trees with the county forester during the preceding summer, and had planned an intelligent cutting which would remove the mature trees and make room for the young ones.

When we had a dozen trees down, Al hooked Bessy to a singletree and a short chain. Log after log was dragged to the skidway and rolled up into place with peavy and crowbar.

At noon I built a fire, using birch bark instead of paper to start it with, and thawed out a couple of thick sirloin steaks which had come from Shorty, our steer which we had butchered a few weeks before. A few icicles hanging in a nearby cave went into the coffeepot, where they soon melted. We broiled the steaks and ate them between slices of fresh bread. The air was cold, even though the sun was shining brightly.

At about four o'clock the temperature took a sudden drop. We hurried to put away the tools, had a final cup of coffee, banked the fire and drove off downhill at a rapid trot. Before we reached home we had to cover our faces to keep them from freezing. We were in time for the night milking and chores.

Succeeding days followed much the same pattern, with variations. Sometimes it snowed, sometimes the temperature rose and it hailed, sleeted or rained; but soon we would be back to subzero again. The foxes up on the mountain got so used to the sound of the chainsaw that they would sit watching us at a distance of not more than a hundred feet. If the day were overcast, the great horned owls would hoot mournfully,

"I promised to get you back to Naknek in time to catch that plane for Anchorage. Besides, he's probably sniffing around our campfire ashes by now."

I looked for him as we winged out of the lake and turned our backs on the sunset, but all I could see were flights of geese, flying close to the earth, giving life to the brown tundra carpet. There was one little prayer in my heart that both the brownie and I would live until another fall, and that I would meet him along the trail in a distant pass where the lakes and the hills and the sky all marched together.

but on clear days great hawks would sail overhead.

We cut a couple of hundred big logs, then began taking them down to the road by the house. We bound each load with a logchain, tightened by a wooden binder-pole, Vermont-fashion. The narrow trail was ice-covered and slippery, so we took a morning off and put new shoes on the horses; the kind with sharp cleats. Even with those, they fell occasionally, and once the whole load slid over the side of the trail, overturned and dragged the horses 50 feet downhill.

Eventually, though, we had all the logs piled on a skidway slightly higher than the road. Harry Skidmore brought his big truck, and we rolled the logs down on planks until the truck body held as much as the springs would take. Off went Harry, to dump them out at the mill and return for another load. Jerome scaled the logs as they came off the truck, and made out slips for us.

Meanwhile, the mill was more than busy. The big logs were sawed into short lengths, cut in the shape of handles on table-saws, sanded and smoothed and then dipped into gay-colored paint. Dry, then went into cartons and were rushed to the railway station at Arlington, marked for St. Louis.

Before he had time to get too impatient, Ram Dass was notified by the Calcutta shop that the consignment of fine paint brushes from America had arrived. So he painted his bedroom walls, got married, and presumably lived happily ever afterward.

We cashed our checks and put a new roof on the house.

Your Shade Trees

(From page 52)

frozen tissues, accompanied by water loss from the crown while the root system is still frozen. The exposed side of the tree usually is the worst affected and injured leaves or needles will wilt and die, or appear as though they had been scorched by fire. Later they will drop off, giving the tree a moth-eaten appearance.

There is little that can be done to prevent such injury to large trees except to choose species for the home site which are thoroughly hardy and deeply rooted. Small evergreens, as rhododendron, laurel, box and small hemlocks, which do not take kindly to winter exposure, may be given some measure of protection through the use of screens to shield them from the winter sun and the strong wind of early spring. A heavy mulch also will help to prevent die-back, but it should be kept loose and porous enough to permit rains to soak in. As an additional precaution it is well to assure the roots of plenty of moisture by soaking the ground thoroughly before it freezes.

Still another type of injury may be traced directly to freezing of the roots. This damage doesn't show up until after growth starts in the spring and may then be revealed by undersized or misshapen leaves, perhaps followed by sun-scorch.

The injury is especially severe on shallow rooted trees when mild late fall temperatures are succeeded by deep freezing of the ground. Treatment for root freezing includes cutting off the injured roots and dressing the cut ends to prevent infection; fertilization to stimulate growth; and mulching to conserve soil moisture.

The twigs, branches and trunks of trees also suffer from freezing. Warm moist days in the late fall followed by an early frost frequently result in injuries to the buds and cambium which have been stimulated to excessive activity. The damage may be most severe on the southerly sides of the trees and, unfortunately, nothing can be done to prevent it. Proper treatment of injured parts would include the pruning of affected branches and twigs, and wound treatment for damaged bark areas.

The winter season is a time when nature takes her toll of many trees, so make sure that structural weaknesses in yours are properly braced and that they enter the winter with ample moisture in the soil around the roots.

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Editorial

RANGE WRANGLE BREWING AGAIN

There's another fight a-brewing, if the Stockmen's Grazing Committee succeeds in manipulations to have introduced in Congress its latest version of a "Proposal for an Act." Purportedly to stabilize the western livestock industry dependent upon the federal range, the Proposal is still substantially the same as the April 12, 1951 version. Only a few of the objectionable features were removed in the most recent (October 4) draft.

This adds up to at least five revisions in the stockmen's attempts to draft a single code for range land management. Yet it must be noted that a few in their group are loath to make concessions on a number of controversial points which many thinking conservationists contend are not in the public interest.

Some spokesmen born and raised in the West contend that the greedy and selfish elements of the Proposal have been largely railroaded through by a handful of cattle barons and their legal hirelings in such a manner that the majority of livestock men are not aware of their full implication. Even outspoken critics of the draft admit the vast majority of livestock men are "square-shooters."

Broadly speaking, opponents find there's still much in the Proposal which places the primary emphasis on unregulated grazing and that other people of the West would be largely shorn of their heritage in recreation and wildlife areas and in some cases jeopardized by flood and erosion conditions which are aggravated by abused watersheds.

As G. H. Collingwood reports this month in *Washington Lookout* (page 4), the Proposal still contains the provision which would authorize issuance of ten-year grazing permits and their renewal, giving preference to stockmen who own, occupy or lease base properties on the public range at the time the Act is passed. This provision proved a mighty juicy bone of contention last spring, and certainly opponents haven't been convinced that those livestock men now holding grazing permits on the national forests should be given such exclusive control and privileges on the public land.

It is coincidence that this issue of *American Forests* leads off with *Peace Comes to Montana's Forest Range* (page 8). In light of long-standing controversies which for generations flared between live-

stock operators and federal officials charged with proper use of public lands, the progress toward amicable settlement of range problems in Montana is, indeed, a milestone in human relations.

Author Dale White does, however, give full and due credit for this epoch of peaceful cooperation to several key individuals. Rangers Tom Lommasson and Clayton Crocker contributed much by bringing the feuding factions together, while Forest Supervisor W. E. Fry maintained a note of sanity through his ability to moderate a half dozen divergent viewpoints and extract any explosives.

Unless those with differences to iron out can get together as they have in Montana, the strength of grazing land administration under the several laws now in effect—be they those of the national forests, Taylor Grazing Act or the Bankhead-Jones Farm Tenant Act—is no stronger than the man who administers them. Author White cites Supervisor Fry of Deerlodge National Forest as one of those strong and well respected administrators and J. C. Urquhart of Gallatin National Forest as another.

It is obvious, however, from the widespread feuding which persists that there aren't enough administrators of the Fry type to go around, so perhaps a uniform code with rules more clearly spelled out might be worthwhile. Perhaps the Stockmen's Grazing Committee might learn a lesson from the Montana experiment and invite all factions concerned to an above-the-table pow wow.

It is improbable stockmen's efforts to win legislative approval for their current Proposal will be any more successful than in the past, especially since they have failed to remove enough of the objectionable features. But an honest and open-minded session of the type we like to identify with our "American Way of Life" would surely produce a common-sense understanding. It's surprising how such give-and-take meetings can clear the air.

Certainly, if there's any truth to hints that a minority clique within the Stockmen's Committee is responsible for the current Proposal, it's time for broader minded men to come forth. Who knows, the stockmen might discover some pretty nice guys among the sportsmen, recreationists, fish and wildlife management men, dude ranchers and federal officials once they gathered 'round the table.



SELECTED BOOKS ON FORESTRY AND RELATED FIELDS OF CONSERVATION

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A First Book of Tree Identification—Rogers	\$ 2.50
A Natural History of Trees of Eastern & Central North America—Peattie	5.00
Forest Trees of the Pacific Coast—Eliot	5.00
Handbook of the Trees of the Northern States and Canada—Hough	5.50
Maintenance of Shade and Ornamental Trees— Pirone	6.50
The Arboretums and Botanical Gardens of North America—Wyman	1.50
The Home Book of Trees and Shrubs—Levison	10.00
The Trees of Pennsylvania—Grimm	5.00
Trees of the Western Pacific—Kraemer	5.50
Trees for American Gardens—Wyman	7.50
Tree Trails and Hobbies—Cater	3.50
Trees—Yearbook of Agriculture—1949—U.S.D.A.	2.00
What's That Tree—Appleton25

GENERAL FORESTRY

An Introduction to American Forestry—Allen	\$ 4.00
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Fifty Years of Forestry in the U.S.A.—Winters	4.00
Forests and Men—Greeley	3.00
Indian Forest and Range—Kinney	4.50

FOREST MANAGEMENT

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Forest Management—Chapman	6.00
The Management of Farm Woodlands—Guise	4.00

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Forest Mensuration—Bruce & Schumacher	\$ 5.00
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WOOD—ITS MANUFACTURE AND USE

A Concise Encyclopedia of World Timbers— Titmuss	\$ 4.75
Air Seasoning and Kiln Drying of Wood—Henderson ..	5.75
Farm Wood Crops—Preston	3.75
Forest Products—Brown	5.00
Harvesting Timber Crops—Wackerman	5.50
Logging—Brown	5.00
Lumber—Brown	4.25
Textbook of Wood Technology—Brown, Panchin & Forsaith	6.00
The Coming Age of Wood—Glesinger	3.50
The Mechanical Properties of Wood—Wangaard	6.00

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Plant Buyers Guide—Steffek	\$ 7.50
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Tree Crops, A Permanent Agriculture—Smith	6.00
Woody-Plant Seed Manual—U. S. Forest Service	2.75

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Forest Pathology—Boyce	6.00
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Our Enemy The Termite—Snyder	3.50

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My Camera in the National Parks—Adams	10.00
My Camera in Yosemite Valley—Adams	10.00
Steve Mather of the National Parks—Shankland	4.00

CAMPING AND RECREATION

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The Saga of the Waterfowl—Bovey	5.00

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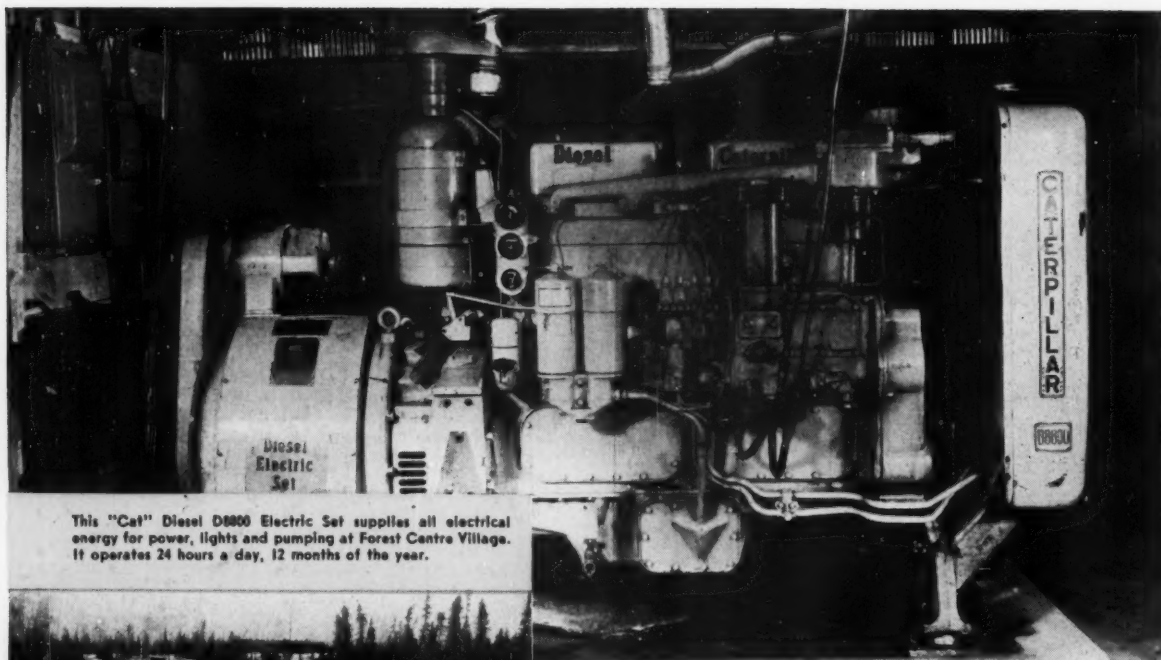
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